Technical Support Document
For
Draft Air Emission Permit No. 12300341-101

This technical support document (TSD) is intended for all parties interested in the draft permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft permit.

1. General information

1.1 Applicant and stationary source location:

Table 1. Applicant and source address

Applicant/Address	**Stationary source/Address** (SIC Code: 3364 - Nonferrous Die-Castings, Except Aluminum)
Okabe Holdings USA Water Gremlin Company 4400 Otter Lake Rd White Bear Township, Minnesota 55110-3757	Water Gremlin Company 4400 Otter Lake Rd White Bear Township, MN 55110-3757
Contact: Bradley Hartsell Phone: 651-209-9466	

1.2 Facility description

The facility manufactures lead (Pb) metal products fabricated using refined material purchased from recycling facilities. The facility produces battery terminal posts for automotive, marine and other consumer, commercial, governmental, and military vehicles and equipment. Other fabricated products include lead and tin sinker weights for recreational fishing applications, and lead components for governmental, commercial, recreational and personal ammunition. Following fabrication, some battery terminal posts are treated with a coating to protect the products from corrosion or to improve fit with other components. The air emission units at the facility include battery terminal post coating units (coaters), die casting units, lead and tin melt pots, coining units, abrasive blasting units, makeup air units, space heaters, an emergency generator, and a solvent-vapor extraction unit. The major pollutants of concern include volatile organic compounds (VOC), trans-1,2-dichloroethylene (t-DCE), lead, particulate matter (PM), particulate matter with aerodynamic diameter less than 10 micrometers (PM_{10}), particulate matter with aerodynamic diameter less than 2.5 micrometers ($PM_{2.5}$), and nitrogen oxides (NO_x). Other pollutants emitted from facility processes include sulfur dioxide (SO_2), carbon monoxide (CO), and hazardous air pollutants (HAPs) associated with fossil fuel combustion from the compression ignition emergency generator, makeup air units, lead and tin melt pots, space heaters, and soil vapor extraction, which emits small amounts of trichloroethylene (TCE).

Pollution control equipment operated at the facility includes eighteen Nederman mist eliminators/HEPA filters and low-efficiency electrostatic precipitators (Smog Hogs), connected in-series, which capture lead and PM/PM_{10}/$PM_{2.5}$ emissions from lead processing units. HEPA filters are used to control PM/PM_{10}/$PM_{2.5}$ emissions from select spray coating and abrasive blasting units. The facility also operates a sub-slab depressurization system (SSDS) and soil vapor extraction (SVE) system with two granular activated carbon (GAC) canisters to collect and control VOC and HAP emissions from beneath the facility's concrete floor.

1.3 Description of the activities allowed by this permit action

This permit action is for a Major Amendment due to (1) the establishment and change to federally enforceable emission caps to avoid major source status, (2) significant amendments to existing monitoring, reporting and record keeping requirements in the permit, and (3) establishment of permit conditions based on a case-by-case determination of emission limitation based on source-specific ambient impact analysis for criteria pollutants and air toxics. The MPCA has a combined operating and construction permitting program under Minn. R. ch. 7007. Under that authority, this permit action authorizes construction. The following changes and modifications are authorized by this permit action.

Acknowledgement of the Stipulation Agreement (Agreement) and Administrative Order (Order). The permit acknowledges the Agreement and the Order as a clarification to document that these enforcement actions are in effect at the time of permit issuance and are not terminated with the issuance of the permit. The permit includes specific provisions from the Agreement, executed March 1, 2019, and Administrative Order, signed January 17, 2020, which are to be continued into the permit term. These provisions are compliance demonstration requirements that were deemed technically appropriate and necessary to ensure continued compliance with the permit limitations as required under Minn. R. 7007.0800. These conditions will remain as part of the permit independently of the status of the Agreement and the Order.

Addition of emission units previously identified as insignificant activities. Several emission units at the facility were previously identified as insignificant activities under Minn. R. 7007.1300, subp. 3(F) (formerly Minn. R. 7007.1300, subp 3(I)), including die casting units, natural gas-fired heating equipment, distillation equipment, and cooling towers. As a result of Title V modeling, the facility accepted emission limits to demonstrate compliance with applicable National Ambient Air Quality Standards (NAAQS). Since these units were modeled explicitly, they have been added to the subject item inventory as emission units, and therefore are not considered insignificant activities. Additionally, some lead processing units with control equipment previously designated as insignificant activities based on their controlled emissions that were not subject to enforceable permit conditions in the previous permit, and therefore, are not insignificant activities under Minnesota Rules.

Addition of limits on t-DCE, PM_{10}, $PM_{2.5}$, NO_2, and lead emissions. The technical review of the permit application required an air emissions risk analysis (AERA) and dispersion model to determine the health risks of t-DCE and lead emissions from the facility. The TCE ban, authorized under Minn. Stat. 116.385, requires that facilities replacing TCE with other chemicals, such as Water Gremlin, must demonstrate that the new chemical is less toxic to human health. This AERA satisfies the requirement legislated in Minn. Stat. 116.385, subd. 3, obligating the MPCA to ensure that solvents selected to replace TCE at facilities remain protective of human health and the environment. Through the permitting process, the facility was required to conduct Title V modeling to determine modeled compliance with applicable PM_{10}, $PM_{2.5}$, NO_2, and lead NAAQS. The results of these analyses required emissions and operation limits such that the facility remains in compliance with all applicable PM_{10}, $PM_{2.5}$, NO_2, and lead NAAQS and below the heath benchmarks for t-DCE and lead.

Addition of continuous emissions monitoring system (CEMS) in the battery terminal post coater stack. The permit includes a VOC CEMS in the battery terminal post coater stack (STRU 73). This was initially required by the Agreement to monitor the occurrence of emissions from the coaters and quantify the amount of t-DCE (a type of VOC) leaving the coaters to verify compliance with solvent use limits required by the Agreement. Permanent operation and maintenance of a VOC CEMS, recordkeeping of CEM results and CEM correlation validation is required by the permit as a supplement to the main compliance demonstration method of recordkeeping of daily material usage. Other supplemental requirements include quarterly VOC solvent inventory audits, and audit reporting.

Addition of solvent vapor remediation system. The permit includes the addition of the sub-slab depressurization and solvent vapor extraction system with associated GAC canister control equipment to

capture existing (and future) sub-slab solvent vapor contamination identified during the remedial investigation. The permit includes limits on emissions of target chlorinated compounds, operation, monitoring, recordkeeping, and reporting requirements. The permit includes provisions specifying the conditions under which operation of the solvent vapor remediation system and associated control equipment may be discontinued as approved by the MPCA Remediation Division.

Addition of ambient monitors for VOCs. Operation of approved ambient air VOC monitors required by the Agreement are to be operated for at least two years following permit issuance to ensure t-DCE emissions remain below health risk benchmarks at all times. The initial monitoring plan is what the Agreement requires, and the Permittee is required to revise the monitoring plan in accordance with parameters defined in the permit. After the revised ambient monitoring plan is approved, the Permittee may change the location of the monitors, the frequency of sampling and the analytical reporting requirements. Conditions that must be met to discontinue VOC monitoring are also specified. The facility is responsible for managing each monitor's operation, maintenance, recordkeeping, and reporting of results as described later in this permit.

Recurring testing to verify coating rooms are operating as total enclosures. In order to ensure all VOC solvent vapors from coating operations are being vented to the common stack (STRU 73), the permit requires that a minimum negative pressure differential be maintained, including continuous monitoring of coating room pressure and alarms (audible and visual) that alert when coating room pressure is above the set point established by the accepted standard practice under the permit. The permit also requires daily inspection of enclosure integrity, annual testing of the enclosure to ensure it meets the definition described above following U.S. Environmental Protection Agency (EPA) Method 204 in Appendix M of 40 CFR Part 51, and maintenance of coating room floor sealant to avoid further sub-slab contamination due to vapor intrusion or spills.

Solvent authorized for use in coating operations. Permit No. 12300341-003 authorized the use of trichloroethylene (TCE), a VOC and HAP, as an allowable solvent in coating operations. Water Gremlin has eliminated the use of TCE at the facility and is using t-DCE as the TCE replacement. Permit No. 12300341-101 prohibits the use of TCE in any facility operations, and changes the allowable VOC-based coating solvent formula to less than or equal to 90 percent by weight VOC. This permit specifically authorizes VOC coatings containing t-DCE. All of the VOC in t¬-DCE coatings is conservatively assumed to be t-DCE, and the balance of the material is comprised of greater than or equal to 10 percent by weight of non-HAP, non-VOC (inert) constituents. Changes to any solvent formulation that increases the amount of regulated pollutants, or air toxics for which there are health benchmarks or adds new pollutants, may require a major amendment described under Minn. R. 7007.1500.

Incorporation of minor amendment authorizing operation of EQUI 82, EQUI 219, and EQUI 220, and authorization to install additional UV coaters. Air Quality Permit No. 12300341-004 authorized construction and operation of a battery terminal post coater (EQUI 82) utilizing a non-t-DCE, very low VOC, UV-cured coating technology. The minor amendment has been incorporated into this permit, including the emission limits for PM_{10} and $PM_{2.5}$ at STRU 73 established by the refined dispersion model. In spite of the effective increase in allowable emissions from EQUI 82 compared to what was authorized by the minor amendment, the refined model demonstrates compliance with applicable PM_{10} and $PM_{2.5}$ NAAQS for the total facility. The refined model includes revised emission limits for EQUI 82 as well as allowable emissions for future UV coaters.

Authorization to convert t-DCE VOC coaters to UV or water-based coating, and conversion to other application methods. Existing t-DCE VOC coaters were converted to use a water-based coating or UV coating application to further reduce VOC emissions. These were added to the permit and their emissions are regulated for VOC, PM_{10}, and $PM_{2.5}$. The permit allows for the conversion of t-DCE VOC coaters to use water-

based or UV coating, and conversion of water-based coaters to UV coaters, or vice versa. The permit allows conversion of dip/drip water-based coaters to water-based spray application methods, and vice versa. The permit prohibits the conversion of water-based or UV coaters to t-DCE VOC coaters, the addition of more t-DCE VOC coaters, or the increase in capacity of existing t-DCE VOC coaters without a major amendment.

Modification of VOC emissions calculation procedure and addition of t-DCE emissions calculation procedure. Permit No. 12300341-101 authorizes calculation of VOC emissions primarily based on solvent usage records, including an audit approach based on solvent purchase and inventory records, and reconciling results from the CEMS measurements to further validate solvent usage records. Due to past compliance issues with the method in Permit No. 12300341-003, and to increase the accuracy of VOC emissions accounting, Permit No. 12300341-101 requires daily recordkeeping of several parameters related to solvent usage, including VOC solvent usage, VOC solvent recovered from the distiller, water-based coating usage, UV coating usage, VOC waste, and the VOC/t-DCE 365-day rolling sum. MPCA is also requiring VOC solvent purchase inventory records and CEMS measurements at the coating room stack to verify the solvent usage records are reliable. VOC emissions from evaporation loses outside the coating rooms will be included based on measured indoor air concentrations as described in this permit. Emissions of t-DCE will be conservatively assumed to be equal to VOC emissions from the t-DCE VOC coaters.

Dismantlement and removal of Fluidized Bed Solvent Recovery (carbon adsorption) unit. The facility had a carbon adsorption unit, originally installed in 2002, to control and recover TCE emissions from coating operations, which were then reconditioned and reused in the coating process. A larger carbon adsorption unit was installed in December 2018 to solve efficiency issues identified in the Environmental Audit. As a result of enforcement of the Agreement, TCE use was banned from the facility and an attempt was made to retrofit the new carbon adsorption unit to recover t-DCE, which became the replacement solvent. The initial performance test revealed a control efficiency far less than warranted by the manufacturer due to the unit being originally designed for TCE recovery. After numerous attempts to obtain a consistent control efficiency greater than or equal to 70 percent as proposed in the application, the facility abandoned the adsorption unit as a feasible control device in its operations; therefore, the carbon adsorption unit has been removed from the permit. The permit also authorizes the replacement of the stack associated with the removed carbon adsorption unit. The facility will demonstrate compliance with VOC and t-DCE emission limits through recordkeeping of solvent usage and computation of emissions based on records and default measured emissions outside the coating rooms. The emission calculations are defined in the permit. The compliance demonstration for limits t-DCE effectively limits the coating solvent usage.

Removal of VOC and HAP emission limit precap. Permit No. 12300341-003 allowed for installation and operation of additional VOC battery terminal post coaters without prior authorization from the MPCA. This is known as a "Precap" type of permit. Permit conditions pre-authorizing construction and operation of additional t-DCE VOC coaters have been removed and will not be authorized by Permit No. 12300341-101. The replacement of existing VOC coaters with larger capacity VOC coaters will not be authorized by this permit. The permit pre-authorizes addition of water-based (very low VOC content) and UV-cured coating units.

1.4 Description of notifications and applications included in this action

Table 2. Notifications and applications included in this action

Date received	Application/notification type and description
06/30/2016	Administrative Amendment (IND20160001)
10/23/2018	Major Amendment (IND20180001)
02/08/2019 (supplemental information received 8/30/2019, 2/21/2020, 4/21/2020, 11/19/2021, 12/6/2021, and 1/10/2022. Conforming Application received 7/1/2022)	Major Amendment (IND20190001)
04/02/2021	Notification of Installation of Controls (IND20210001)

1.5 Facility emissions:

The net emission changes resulting from this permit action are reductions in allowable emission. This is because the small increases of emissions allowed for the conversion of coaters (less than 0.05 tons per year of PM_{10} and $PM_{2.5}$ and 1.07 tons per year of VOC) is countered by emission reductions from existing equipment due to the combined effect of new operating limitations and the installation of additional control equipment required by the permit. It is difficult to ascertain the exact emission reduction in allowable emissions because many of the existing emission units subject to new operating limitations and additional control equipment were not included in permit 12300341-003, and other changes in emission units have occurred since permit 12300341-003 was issued. Under Permit No. 12300341-101, the revised total facility limited emissions are listed in Table 3.

Table 3. Total facility potential to emit summary

	PM tpy	**PM_{10}** tpy	**$PM_{2.5}$** tpy	**SO_2** tpy	**NO_x** tpy	**CO** tpy	**Lead** tpy	**CO_2e** tpy	**VOC** tpy	**Single HAP** tpy	**All HAPs** tpy
Total Facility Unlimited Potential Emissions	198.11	195.08	194.31	0.16	20.99	17.24	1.86	24,328	537.7	1.86	2.14
Total Facility Limited Potential Emissions	8.72	5.70	4.93	0.15	19.60	16.07	0.025	22664	93.10	0.34	0.39
Total Facility Actual Emissions (2020)	1.941	3.620	2.033	0.009	1.356	1.128	0.010	*	29.40	*	

* Not reported in MN emission inventory.

Table 4. Facility classification

Classification	Major	Synthetic minor/area	Minor/area
PSD		X	
Part 70 Permit Program		X	
Part 63 NESHAP			X

1.6 Changes to permit

The MPCA has a combined operating and construction-permitting program under Minnesota Rules Chapter 7007. These rules mandate certain conditions that must be included in every permit, and also provide that MPCA has discretion to include additional conditions that the Agency determines to be necessary to protect human health and the environment. Under this authority, the following changes and additions to the permit are made through this permit action:

- The permit has been updated to reflect current MPCA templates and standard citation formatting;
- One-time testing requirements, initial compliance requirements, and other requirements that have been completed or no longer apply have been deleted;
- Some requirements have been reordered to help with clarity (i.e. units with similar emission limits are grouped);
- TCE removed as an allowable solvent for use in facility operations;
- Added authorization to use HAP-free VOC solvent formula in coating operations;
- Removed synthetic minor emission limits for total and single HAPs;
- Removed the carbon adsorption unit from the permit subject item inventory;
- Added authorization to convert t-DCE VOC coaters to use water-based and/or ultraviolet (UV)-cured coating only;
- Changed calculation procedure to demonstrate compliance with VOC and t-DCE emission limits;
- Removed VOC Pre-Cap pre-authorizing construction of additional VOC coaters;
- Added existing emergency generator, including applicable federal and state requirements;
- Added PreCap limit for combustion units used for air conditioning and space heating in North Building (STRU 38);
- Added ambient air monitors for VOC (t-DCE) and operation of ambient monitoring network;
- Added operation and maintenance of the sub-slab vapor remediation system;
- Added installation, operation, and maintenance of a permanent VOC (CEMS) at STRU 73;
- Added coining units and tin melt pot to the subject item inventory;
- Added die casting units and associated control equipment to the subject item inventory with applicable requirements;
- Added emission limits and compliance demonstrations for PM_{10}, $PM_{2.5}$, and lead based upon NAAQS modeling and AERA;
- Added modifications to stack parameters and control equipment required for NAAQS and AERA compliance;
- Added testing and monitoring requirements for coating room total enclosures and emissions;
- Added testing and monitoring requirements for several lead processing sources;
- Added research and development (R&D) and prototype coaters to subject item inventory;
- Added cooling towers and paved roads as fugitive emissions sources;
- Added replacement of the battery terminal post coater stack (STRU 73)
- Added solvent distillation unit, including operational requirements, emissions calculations, and recordkeeping;
- Added specific permit requirements in enforcement of the March 1, 2019 Stipulation Agreement and the January 17, 2020 Administrative Order.
- Replacement of the coating room's stack

2. Regulatory and/or statutory basis

2.1 New source review (NSR)

New Source Review is the federal air permit construction program authorized by the Clean Air Act. NSR includes the Prevention of Significant Deterioration (PSD) permit program for pollutants emitted in an area

that is in attainment for that pollutant, and the nonattainment new source review permit program for pollutants from sources located in an area that is not in attainment for that pollutant.

The permit carries forward limits on the facility for VOC such that it remains a minor source under NSR regulations. The facility uncontrolled emissions of PM/PM_{10}/$PM_{2.5}$ are below NSR major source thresholds.

2.1.1. Listed source evaluation

The facility was evaluated to determine whether or not it would be considered a secondary metal production plant defined by the Clean Air Act. Secondary metal production plants are a listed source under 40 CFR § 52.21(b)(1)(iii) and subject to the 100 ton per year major source threshold. Applicability determinations issued by EPA describe the criteria under which a facility would be considered a secondary metal production facility. The major themes in these determinations include smelting and refining activities using furnaces, and which part of the process produces the most emissions. In the case of Water Gremlin, lead ingots purchased from a local refinery are melted at relatively low temperatures, which does not constitute smelting. In addition, the majority of emissions from the facility come from the die casting process, not melting. Therefore, it was reasonable to conclude that Water Gremlin is not a listed source under PSD regulations.

2.2 Part 70 permit program

The permit carries forward limits on the facility for VOCs and includes new limits on PM_{10} and $PM_{2.5}$ such that it remains a non-major source under the Part 70 permit program.

2.3 New source performance standards (NSPS)

The permit includes the addition of an emergency compression ignition reciprocating internal combustion engine (CI RICE) subject to requirements of 40 CFR pt. 60, subp. IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

2.4 National emission standards for hazardous air pollutants (NESHAP)

The facility is prohibited from using HAP-containing materials in coating operations; therefore, the facility is an area source of HAPs under 40 CFR pt. 63 and no major source NESHAPs apply. However, it was determined that even though the facility is not subject to 40 CFR pt. 63, subp. MMMM - National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products (subp. MMMM), the limits and monitoring requirement in Subp. MMMM are reasonable and appropriate controls to establish under Minn. R. 7007.0800 for Coating Rooms 1, 2, and 3 to ensure these rooms operate as permanent total enclosures. It is important to ensure total enclosure operation because the dispersion modeling for particulate matter and t-DCE assumed all emissions from coating rooms were captured and emitted from the coating room stack (STRU 73).

The emergency generator is subject to the standards of 40 CFR pt. 63, Subp. ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Since the date of construction was in 2012, compliance with this standard is achieved through compliance with 40 CFR pt. 60, subp. IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

On February 23, 2022, the EPA proposed a rule to amend the 2007 NESHAP for Lead Acid Battery Manufacturing Area Sources (40 CFR Part 63, subp. PPPPPP), and the 1982 NSPS for Lead Acid Battery Manufacturing Plants (40 CFR Part 60, subp. KK). This rule would expand the applicability provisions in the area source NESHAP to facilities that make lead bearing battery parts or process input material including, but not limited to, grid casting facilities and lead oxide manufacturing facilities. It also updates the NSPS by revising lead emission limits for several types of operations at new, reconstructed, or modified sources. This rule is not yet finalized. Therefore, it is not known if these revisions will apply to Water Gremlin. However, if

the final rule does apply to the Water Gremlin facility, then Water Gremlin must comply with the requirements of the NESHAP and/or NSPS even if those conditions are not specifically listed in its air permit as a permit condition. Additionally, if the rules are applicable to Water Gremlin and there are three or more years remaining in the permit term when the rules become effective the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3

2.5 TCE ban

On May 16, 2020, Governor Walz signed the "White Bear Area Neighborhood Concerned Citizen Group Ban on TCE" Act (Minn. Stat. § 116.385), named for the residents that worked to get legislation passed to ban TCE. The law bans the use of TCE on or after June 1, 2022, in any facility that is required to have a state air permit, including manufacturing, processing, and cleaning processes. TCE is widely used in industrial and commercial processes and has some limited uses in consumer and commercial products. It is used as a solvent for degreasing metal parts during the manufacture of a variety of products and can be found in consumer products, including some wood finishes, adhesives, paint and stain removers, and brake cleaner. TCE can also be used in the manufacturing of other chemicals. TCE is categorized as a HAP by the Federal Clean Air Act (CAA) and a VOC by federal regulations. Minn. Stat. § 116.385, subp. 2, requires that "cessation of use must be made enforceable in the air emissions permit for the facility…" by June 1, 2022. This permit action prohibits the use of TCE at the facility as required by the TCE ban legislation.

Minn. Stat. § 116.385, subd. 3, requires that facilities replacing TCE with other chemicals must demonstrate that the new chemical is less toxic to human health. Water Gremlin replaced TCE based coating with t-DCE-based coating and this permit includes conditions to ensure this replacement is less toxic to human health.

2.6 Air Emissions Risk Analysis (AERA)

An AERA was completed to ascertain the impact of t-DCE and lead emissions on inhalation health benchmarks established by the Minnesota Department of Health (MDH). The permit establishes new limits on t-DCE and lead that are protective of each inhalation health benchmark. Other air toxics present in UV coatings and those measured below detection levels in water-based coatings were evaluated by the AERA and deemed to not be a risk to human health.

2.7 2019 and 2020 enforcement actions

As the result of an investigation and enforcement action by the MPCA, a Stipulation Agreement between Water Gremlin and the MPCA was executed on March 1, 2019. The Stipulation Agreement outlines the violations alleged by the MPCA and includes a civil penalty. Part 10 of the Agreement included numerous corrective actions and requirements to be completed by Water Gremlin. The Permittee was required to complete all corrective actions and requirements prior to issuance of this permit. A copy of the executed Stipulation Agreement may be found in Attachment 4 to this TSD. The Stipulation Agreement will continue to be in effect until the MPCA terminates it independently of the effective date of the issuance date for Permit No. 12300341-101.

An Administrative Order was issued to Water Gremlin on August 22, 2019 (2019 Order) for the facility to immediately cease TCE-based VOC coating operations after the remediation investigation revealed soil vapor contamination beneath the facility. A second Administrative Order was issued on January 17, 2020 (2020 Order) outlining the steps necessary for the facility to resume non-TCE VOC coating operations. The 2020 Order included corrective actions to be completed before the facility could restart coating operations, as well as additional operating requirements that must be followed until the 2020 Order is terminated. Water Gremlin completed the required corrective actions that were preconditions to resume non-TCE VOC coating operations under the 2020 Order on March 1, 2019. The permit requires continuous compliance with the 2020 Order until it is terminated by the MPCA independently of the effective date of issuance of

Permit No. 12300341-101. Copies of the 2019 and 2020 Administrative Orders are included as Attachment 5 to this TSD.

The permit acknowledges the Stipulation Agreement and Administrative Order as a clarification, so members of the public are assured these are not automatically terminated with the issuance of Permit No. 12300341-101. In addition, this acknowledgement will be helpful for compliance and enforcement staff such that it is readily clear the Water Gremlin facility is subject to other MPCA enforcement documents besides the permit. The permit includes a sunset provision for the Stipulation Agreement and Administrative Order when MPCA terminates these two enforcement documents independently from the permit issuance.

The permit includes several specific provisions from the Agreement and Administrative Order that are to be continued into the permit term independently of the status of the Agreement and Administrative Order. These are compliance demonstration requirements that were deemed technically appropriate and necessary to ensure continued compliance with the permit limitations as required under Minn. R. 7007.0800.

2.8 Approved Replicable Methodology (ARM)

ARM was defined as part of the EPA's 2009 Flexible Air Permitting Rule at 40 CFR subp. 70.2 and is part of MPCA's approved state and Title V permitting program. ARM language includes the permit terms that specify a protocol for re-setting a parameter required by the permit as defined at Minn. R. 7007.0100, subp. 6b. Per MPCA guidance, when the initial parameter is known or can reasonably be determined upfront, and where the permit includes periodic testing which may re-set the parameter, the permit should contain the parameter, as well as an ARM or protocol, for revising the parameter through testing. As long as the Permittee is implementing the ARM as required by the permit, the permit does not need to be reopened to revise the parameter. Every level of permit amendment (from administrative to major) can be used to incorporate revised parameters that were approved via an ARM. Alternatively, in the absence of ARM language in the permit, a reopening for establishing the revised parameter would require a major amendment process to be incorporated into the permit due to the case-by-case and site-specific nature of the parameter being revised.

The ARM itself is a case-by-case and site-specific requirement and is a regulatory construct that is also used in state permits. Therefore, the establishment or revision of the ARM provisions requires a major amendment process under Minn. R. 7007.1500, likely triggering one or more of the following: subp. 1(A) (revision to monitoring), 1(B) (case-by-base limit), and 1(C) (used for assuring compliance with a limit taken to avoid an applicable requirement). The permit includes ARM language to reset parameters such as emission factors, transfer efficiencies and exhaust flow rates.

2.9 Commercial disclosure regarding facility operations

The MPCA requires that the Permittee conduct a meeting annually to disclose to the community information regarding the facility's operations due to the significant public interest and concern about the facility's prior and ongoing operations. Prior enforcement actions involved potential health impacts to the community located near the facility. Information reported by the public was also connected to air emissions and take-home lead issues. The Permittee has represented to the MPCA that it intends to reduce air emissions through reductions in t-DCE use. These meetings are an opportunity for the public to understand the Permittee's operations that may impact the community, including any changes the facility is making to reduce air emissions, and to learn about its regulatory compliance status. The MPCA has determined that these meetings are necessary for the ongoing oversight of the Permittee's operations and will inform the MPCA's finding that the Permittee will operate its facility in compliance with its permit conditions. These meetings are a reasonable method for obtaining and exchanging information, will aid oversight, and supplement inspections conducted at the facility. MPCA believes annual community meetings are necessary for the protection of human health and the environment.

2.10 Regulatory overview

Table 5. Regulatory overview of units affected by the modification/permit amendment

Subject item*	Applicable regulations	Rationale
TFAC 1 (Water Gremlin Co.)	Minn. Stat. 116.385	Trichloroethylene (TCE) Ban. The Permittee may not use trichloroethylene at its permitted facility after June 1, 2022, including in any manufacturing, processing, or cleaning processes, except as described under the statute. The permittee is required to demonstrate that the solvent that replaces TCE is less toxic to human health.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Air Emissions Risk Analysis (AERA) and NAAQS modeling. The permit establishes conditions in which revised AERA and dispersion modeling analyses must be done following changes to the parameters established by the AERA and dispersion model.
		Equivalent or Better Dispersion Modeling (EDM). Requirements specifying conditions in which a permit modification triggers the requirement to remodel pollutants described in Appendix C.
		Ambient Air Monitoring. Operation and maintenance of an ambient air monitoring network around the facility demonstrates continuous compliance with the applicable t-DCE health benchmark.
		General Public Preclusion Plan. Implementation and maintenance of the plan to prevent the general public from entering the ambient air boundary established during dispersion modeling.
	Minn. R. 7007.0800, subp. 2(B), Minn. Stat. 116.07, subd. 9(2)]	Annual Community Engagement Meeting to update the community and answer questions on facility operations and overall compliance with environmental permits and regulations.
COMG 1 (VOC and 1,2 (trans) Dichloroethylene Limits and VOC Coater, Water-Based Coater, UV Coater, and Solvent Distillation Operation Requirements)	40 CFR § 52.21(b)(1)(i)	Prevention of Significant Deterioration (PSD). Limits taken to avoid major source under PSD for all non-combustion emissions of VOC, including uncaptured emissions.
	40 CFR § 70.2	Limits to avoid Part 70. The permit limits VOC emissions to less than Part 70 thresholds. Requirements include monthly compliance calculations based on daily usage records, purchase, and inventory recordkeeping.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), Minn. Stat. 116.385 subd. 3	Air Emissions Risk Analysis (AERA). The AERA, the evaluation of ambient air measures of t-DCE and records of actual operation were used to established permit limits on t-DCE emissions in which ambient concentrations remain below health benchmarks established by the Minnesota Department of Health. Requirements include daily compliance calculations, daily recordkeeping of t-DCE usage, recovery from the distillation unit, t-DCE sent out of the facility as waste and t-DCE emitted from outside the coating rooms. It is a limit based on a 365-day rolling sum due to use of t-DCE at the facility being so close to the limit.

Subject item*	Applicable regulations	Rationale
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7007.0800, subps. 4-6, Minn. Stat. 116.07, subd. 4a(a), Minn. Stat. 116.385, subd. 3	t-DCE VOC Solvent Formulation. The permit limits the allowable VOC solvent formulation to that which was characterized by the AERA. The permit specifies the conditions under which the formula may be changed.
		Reconciliation of Predicted Stack Concentration and CEMS Readings. The Permittee must reconcile predicted concentrations and CEMS readings to verify usage records do not need an audit to ensure reliability of records.
		t-DCE purchase and inventory records audit. Each calendar quarter, the Permittee must audit purchase records and existing inventory of 1,2-(trans-) Dichloroethylene VOC-containing material, and 1,2-(trans-) Dichloroethylene VOC-containing material usage records, and keep records for each quarterly audit.
		Water-Based Coating Formulation. The permit limits the allowable water-based coating formulation to that which was characterized by the AERA. The permit specifies the conditions under which the formula may be changed.
		UV Coating Formulation. The permit limits the allowable UV coating formulation to that which was characterized by the AERA. The permit specifies the conditions under which the formula may be changed.
		Conversion of t-DCE VOC Coating. Pre-authorization allowing the conversion of coaters using t-DCE VOC coating to use water-based or UV coating only.
		Conversion of Application Method of Water-Based coaters. Pre-authorization to convert water-based spray coaters to dip/drip coaters, and vice versa.
		Conversion of Water Based Coaters and UV Coaters. Pre-authorization allowing the conversion of coaters using water-based coating to use UV coating and vice versa.
		Replacement and Addition of Water Based Coaters and UV Coaters. Pre-authorization allowing the replacement and addition of coaters using water-based and UV coatings.
		Replacement of Existing t-DCE VOC Coaters. Pre-authorization allowing the replacement of existing t-DCE VOC coaters of equal or lower design capacity and that does not increase emissions of t-DCE, PM_{10}, or $PM_{2.5}$.
		Prohibition to add new t-DCE VOC coater that are not replacing existing t-DCE VOC coaters.
		Change of location of Water-Based Dip/Drip coaters. Pre-authorization allowing the change of location of existing water-based dip/drip coaters to locations outside the coating rooms exhausting through STRU 73.
		t-DCE VOC Storage and Transfer. Handling and storage requirements to minimize emissions from evaporation loses and spills.
		t-DCE VOC Coater Installation and Maintenance. Specifications for VOC coater installation and maintenance as required by the Administrative Order.

Subject item*	Applicable regulations	Rationale
COMG 2 (PM10 and PM2.5: Limits and Compliance Requirements for Ultraviolet (UV) Battery Terminal Post Coaters)	40 CFR § 52.21(b)(1)(i)	Prevention of Significant Deterioration (PSD). Limits taken to avoid major source under PSD for VOC emissions. Requirement requires to comply with requirements in COMG 1.
	40 CFR § 70.2	Limits to avoid Part 70. The use of control equipment complying with COMG 14 is needed to maintain the PM_{10} and $PM_{2.5}$ emissions at less than Part 70 thresholds. Other requirements include daily compliance calculations, and recordkeeping. The calculations are based on approved emission factors and required control efficiencies. The daily calculations are required because the PM_{10} and $PM_{2.5}$ limits for compliance with NAAQS serve the purpose of also demonstrating compliance with this requirement as well.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	NAAQS Modeling. The dispersion model establishes permit limits on PM_{10} and $PM_{2.5}$ emissions such that ambient concentrations remain below NAAQS thresholds. Requirements include use of control equipment, maintenance of dispersion characteristics, coating usage recordkeeping, and daily compliance calculations based on approved emission factors and required control efficiencies. The daily calculations are required because the PM_{10} and $PM_{2.5}$ are 24-hour standards.
COMG 4 (PM10 and PM2.5: Limits and Compliance Requirements for VOC Spray Battery Terminal Post Coaters)	40 CFR § 52.21(b)(1)(i)	Prevention of Significant Deterioration (PSD). Limits taken to avoid major source under PSD for VOC emissions. Requirement requires to comply with requirements in COMG 1.
	40 CFR § 70.2	Limits to avoid Part 70. The use of control equipment complying with COMG 14 is needed to maintain the PM_{10} and $PM_{2.5}$ emissions at less than Part 70 thresholds. Other requirements include daily compliance calculations, and recordkeeping. The calculations are based on approved transfer efficiencies and required control efficiencies The daily calculations are required because the PM_{10} and $PM_{2.5}$ limits for compliance with NAAQS serve the purpose of also demonstrating compliance with this requirement as well.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	NAAQS Modeling. The dispersion model establishes permit limits on PM_{10} and $PM_{2.5}$ emissions such that ambient concentrations remain below NAAQS thresholds. Requirements include use of control equipment, minimum transfer efficiency, maintenance of dispersion characteristics, daily coating usage recordkeeping, and daily compliance calculations. The daily calculations are required because the PM_{10} and $PM_{2.5}$ are 24-hour standards.
COMG 5 (Permanent Total Enclosure Requirements: Coating Rooms)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Coating Room Pressure Drop. Operation maintenance of each coating room such that it remains a permanent total enclosure, and that the minimum pressure drop remains below the limit established in the permit, to ensure all coating emissions vent to STRU 73 as characterized by the AERA.
	Minn. R. 7007.0800, subp. 2(A) & (B)	Coating Room Pressure Drop Continuous Monitoring Device. Installation, operation, and maintenance of a pressure drop monitoring device to monitor the pressure drop across each coating room enclosure.

Subject item*	Applicable regulations	Rationale
		Coating Room Pressure Alarm. Installation, operation, and maintenance of an alarm that triggers when the pressure drop limit of any coating room is exceeded.
		Weekly Reporting. Reports of deviations from the required pressure drop limit must be reported weekly.
		Retro-Coat Vapor Intrusion System. Coating room floors where t-DCE VOC coaters operate are required to be coated in order to minimize vapor intrusion into concrete surfaces.
		Retro-Coat Vapor Intrusion System Inspections. Requirement for daily inspection of coating room floors where t-DCE VOC coaters operate for degradation, including recordkeeping and reporting.
	Minn. R. 7017.2005 – 7017.2025	Performance testing within 30 days of permit issuance and annually thereafter to ensure the system operates as a total enclosure.
COMG 6 (Indirect Heating Equipment Rule Requirements))	Minn. R. 7011.0515	Standards of Performance for New Indirect Heating Equipment. • Construction of the unit was on or after January 31, 1977; • The unit burns gaseous fuels; • The facility is located inside the cities in Table II of the rule; • The facility has less than or equal 250 MMBtu/hr of indirect heating equipment.
COMG 7 (Industrial Process Equipment Rule)	Minn. R. 7011.0715	Standards of Performance for post-1969 Industrial Process Equipment. Equipment for which there is no other promulgated performance standard is subject to the opacity and PM limits in this rule. Construction of the unit was on or after July 9, 1969.
COMG 8 (PM10 and PM2.5: Limits and Compliance Requirements for Water-Based Spray Battery Terminal Post Coaters)	40 CFR § 52.21(b)(1)(i)	Prevention of Significant Deterioration (PSD). Limits taken to avoid major source under PSD for VOC emissions. Requirement requires to comply with requirements in COMG 1
	40 CFR § 70.2	Limits to avoid Part 70. The use of control equipment complying with COMG 14 is needed to maintain the PM_{10} and $PM_{2.5}$ emissions at less than Part 70 thresholds. Other requirements include compliance calculations, and recordkeeping.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling. The dispersion model establishes permit limits on PM_{10} and $PM_{2.5}$ such that ambient concentrations remain below applicable NAAQS. Requirements include use of control equipment, minimum transfer efficiency, maintenance of dispersion characteristics, coating usage recordkeeping and compliance calculations.

Subject item*	Applicable regulations	Rationale
COMG 9 (Sub-Slab Vapor Remediation System: Operation Requirements)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Air Emissions Risk Analysis (AERA). Controlled and uncontrolled emissions from sub-slab vapor remediation system operation required by the Stipulation Agreement were characterized by the AERA. The permit requires operation and maintenance of the sub-slab vapor remediation system and control equipment in accordance with the MPCA Remediation Division's requirements. The permit defines an alternative uncontrolled emission rate as a point of reference for future analysis. The permit authorizes the removal of the activated carbon canisters with written approval from the MPCA Remediation Division.
COMG 10 (NOx: North Building Space Heating Capacity Limits)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling and AERA. The permit limits the total heat input from space heaters as well as the months of operation to what was assumed in the dispersion model. The permit requires the facility to maintain an inventory of combustion units at the facility as well as daily records of operation.
COMG 11 (Mist Eliminator/HEPA Filter and Electrostatic Precipitator Control Equipment Train – Melt Pots)	40 CFR § 70.2	Limits to Avoid Part 70. Control efficiency and other operating requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds. Limits reflect that the units have total enclosures connecting to control equipment. Permit specifies that replacement HEPA filters must meet the COMG 11 requirements.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling and AERA. The permit requires the emissions from melting pots to be controlled by pollution control equipment meeting the conditions in COMG 11. The permit requires installation, operation, and maintenance of control equipment at the minimum overall control efficiency assumed in the dispersion model.
COMG 12 (Mist Eliminator/HEPA Filter and Electrostatic Precipitator Control Equipment Train – Die Casting)	40 CFR § 70.2	Limits to Avoid Part 70. Control efficiency and other operating requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds. Limits reflect that the units have total enclosures. Permit specifies that replacement HEPA filters must meet the COMG 12 requirements.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling and AERA. The permit requires the emissions from die casting units to be controlled by pollution control equipment meeting the conditions in COMG 12. The permit requires installation, operation, and maintenance of control equipment at the minimum overall control efficiency assumed in the dispersion model.
COMG 13 (Direct Heating Equipment Rule Requirements)	Minn. R. 7011.0610	Standards of Performance for Direct Heating Equipment. • Construction of the units was on or after July 9, 1969; • The units burn gaseous fuels; • The facility is located in the Twin Cities; and • The facility has less than or equal 250 MMBtu/hr of direct heating equipment.
COMG 14 (HEPA Filters – Spray Coaters)	40 CFR § 70.2	Limits to Avoid Part 70. Control efficiency and other operating requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds. Limits reflect that the units have total enclosures connecting to control equipment. Permit specifies that replacement HEPA filters must meet the COMG 14 requirements.

Subject item*	Applicable regulations	Rationale
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling and AERA. The permit requires installation, operation, and maintenance of control equipment at the minimum overall control efficiency assumed in the dispersion model.
COMG 15 (NOx: South Building Space Heating Capacity Limits)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling and AERA. The permit limits the total heat input from space heaters as well as the months of operation to what was assumed in the dispersion model. The permit requires the facility to maintain an inventory of combustion units at the facility as well as daily records of operation.
COMG 16 (Die Casting Annual Throughput and Lead Emission Limits)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling and AERA. The permit limits the total process throughput and annual lead emissions from die casting units to what was assumed in the dispersion model. The permit requires the facility to calculate and maintain records of process throughput of lead-containing material and annual lead emissions as a 365-day rolling sum.
EQUI 82 (Battery Terminal Post Coater 6) EQUI 84 (Battery Terminal Post Coater 9) EQUI 85 (Battery Terminal Post Coater 10) EQUI 87 (Battery Terminal Post Coater 12) EQUI 88 (Battery Terminal Post Coater 15) EQUI 89 (Battery Terminal Post Coater 17) EQUI 92 (Battery Terminal Post Coater 20) EQUI 93 (Battery Terminal Post Coater 21) EQUI 94 (Battery Terminal Post Coater 22) EQUI 95 (Battery Terminal Post Coater 23) EQUI 97 (Battery Terminal Post Coater 25) EQUI 98 (Battery Terminal Post Coater 26) EQUI 99 (Battery Terminal Post Coater 27) EQUI 100 (Battery Terminal Post Coater 28) EQUI 116 (Battery Terminal Post Coater 30) EQUI 117 (South Building R&D Coater)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Stat. 116.07, subd. 4a(a)	Air Emissions Risk Analysis (AERA) and NAAQS Modeling. The permit requires record keeping of emissions and compliance with dispersion characteristics assumed in the dispersion modeling.
	40 CFR § 70.2	Limits to Avoid Part 70. Emissions are required to be controlled by equipment meeting minimum requirements on control efficiency and other operating requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds.

Subject item*	Applicable regulations	Rationale
EQUI 166 (Coating Room Bulk Solvent Tank) EQUI 172 (Battery Terminal Post Coater 29) EQUI 173 (Coating Room Soaker Tank) EQUI 174 (Solvent Distillation Unit) EQUI 219 (Battery Terminal Post Coater 33) EQUI 220 (Battery Terminal Post Coater 34) EQUI 233 (Battery Terminal Post Coater 19) EQUI 240 (Prototype Coater)		
EQUI 82 (Battery Terminal Post Coater 6) EQUI 117 (South Building R&D Coater) EQUI 240 (Prototype Coater)	40 CFR § 70.2	Limits to Avoid Part 70. Requirements to keep operating records and calculations in COMG 2 to show compliance with limits on $PM_{10}/PM_{2.5}$ so the allowable emissions for the facility remain below Part 70 thresholds.
EQUI 176 (VOC Continuous Emissions Monitor)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7007.0800, subps. 4-6	Requirement to operate a Continuous Emission Monitor (CEM) to audit and validate records of VOC emissions.
	Minn. R. 7017.1060 to 7017.1180	Requirements for the proper operation, maintenance, and audits of the CEM.
EQUI 101 (CF Scrap Re-Melt Pot) EQUI 102 (Small Re-Melt Pot)	40 CFR § 70.2	Limits to Avoid Part 70. Process throughput limits, definition of design fuel, recordkeeping, and operation of control equipment requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds.
EQUI 103 (Doe Run Melt Pot) EQUI 104 (CF Re-Melt Pot) EQUI 221 (Tin Melt Pot)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Air Emissions Risk Analysis (AERA) and NAAQS Modeling. The AERA and NAAQS model establishes permit limits on process throughput such that ambient concentrations of PM_{10}, $PM_{2.5}$, and lead remain below applicable health benchmarks and NAAQS. Requirements include emissions vented to stacks as a total enclosure and the use of control equipment, minimum total control efficiency, venting to specific stacks to maintain dispersion characteristics, lead-containing material process throughput recordkeeping and emissions calculations.
EQUI 113: Tool room 1 Abrasive Blasting EQUI 114: Tool room 2	40 CFR § 70.2	Limits to Avoid Part 70. Process permitted to operate at design capacity with operation of control equipment requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds.

Subject item*	Applicable regulations	Rationale
Abrasive Blasting EQUI 115: DC Abrasive Blasting	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Air Emissions Risk Analysis (AERA) and NAAQS Modeling. The AERA and NAAQS model establishes permit limits on emission rates at design capacity such that ambient concentrations of PM_{10}, $PM_{2.5}$, and lead remain below applicable health benchmarks and NAAQS. Requirements include emissions vented to stacks as a total enclosure and the use of control equipment, minimum total control efficiency, venting to specific stacks to maintain dispersion characteristics, and stack testing of PM_{10} and $PM_{2.5}$ to verify controlled emission rates.
EQUI 121 (Die Cast DC09) EQUI 122 (Die Cast DC12) EQUI 123 (Die Cast DC33) EQUI 124 (Die Cast DC14) EQUI 125 (Die Cast DC15) EQUI 126 (Die Cast DC21) EQUI 127 (Die Cast DC08) EQUI 128 (Die Cast DC10) EQUI 129 (Die Cast DC17) EQUI 130 (Die Cast DC18) EQUI 131 (Die Cast DC36) EQUI 132 (Die Cast DC37) EQUI 133 (Die Cast DC25) EQUI 134 (Die Cast DC22) EQUI 135 (Die Cast DC35) EQUI 136 (Die Cast DC32) EQUI 137 (Die Cast DC26) EQUI 138 (Die Cast DC27) EQUI 139 (Die Cast DC16) EQUI 140 (Die Cast DC28) EQUI 141 (Die Cast DC29) EQUI 142 (Die Cast DC19) EQUI 143 (Die Cast DC34) EQUI 146 (Die Cast DC42) EQUI 147 (Die Cast DC38) EQUI 149 (Die Cast DC40) EQUI 150 (Die Cast DC48) EQUI 152 (Die Cast DC41) EQUI 153 (Die Cast DC44) EQUI 154 (Die Cast DC45) EQUI 155 (Die Cast DC52) EQUI 156 (Die Cast DC50) EQUI 157 (Die Cast DC51)	40 CFR § 70.2	Limits to Avoid Part 70. Process throughput limits, recordkeeping, and operation of control equipment requirements to limit PM_{10}/$PM_{2.5}$ potential to emit to below Part 70 thresholds.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Air Emissions Risk Analysis (AERA) and NAAQS Modeling. The AERA and NAAQS model establishes permit limits on process throughput such that ambient concentrations of PM_{10}, $PM_{2.5}$, and lead remain below applicable health benchmarks and NAAQS. Requirements include emissions vented to stacks as a total enclosure, use of control equipment, minimum total control efficiency, venting to specific stacks to maintain dispersion characteristics, lead-containing material process throughput recordkeeping and emissions calculations.

Subject item*	Applicable regulations	Rationale
EQUI 158 (Die Cast DC53)		
EQUI 160 (Billet Saw)	40 CFR § 70.2	Limits to Avoid Part 70. Process throughput limits and recordkeeping requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Air Emissions Risk Analysis (AERA) and NAAQS Modeling. The AERA and NAAQS model establishes permit limits on process throughput such that ambient concentrations of PM_{10}, $PM_{2.5}$, and lead remain below applicable health benchmarks and NAAQS. Requirements include emissions vented to stacks as a total enclosure, venting to specific stacks to maintain dispersion characteristics, lead-containing material process throughput recordkeeping and emissions calculations.
STRU 1 (Smog Hog #15 Stack) STRU 15 (Smog Hog #1 Stack) STRU 16 (Smog Hog #2 Stack) STRU 17 (Smog Hog #3 Stack) STRU 20 (Smog Hog #6 Stack) STRU 23 (Smog Hog #9 Stack) STRU 24 (Smog Hog #10 Stack) STRU 25 (Smog Hog #11 Stack) STRU 26 (Smog Hog #12 Stack) STRU 30 (Smog Hog #16 Stack) STRU 31 (Smog Hog #17 Stack) STRU 32 (Smog Hog #18 Stack) STRU 33 (Smog Hog #19 Stack) STRU 34 (Smog Hog #20 Stack) STRU 35 (Smog Hog #21 Stack) STRU 43 (North Building Vent 7) STRU 44 (North Building	Limits to Avoid Part 70	Process throughput limits and recordkeeping requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds.

Subject item*	Applicable regulations	Rationale
Vent 1) STRU 45 (North Building Vent 2) STRU 46 (North Building Vent 3) STRU 47 (North Building Vent 4) STRU 48 (North Building Vent 5) STRU 49 (North Building Vent 6) STRU 50 (North Building Vent 8) STRU 51 (North Building Vent 9) STRU 52 (North Building Vent 10) STRU 53 (North Building Vent 11) STRU 56 (North Building Vent 14) STRU 57 (North Building Vent 20) STRU 74: Smog Hog #5 Stack STRU 75: Smog Hog #8 Stack	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling and AERA. Limits for PM_{10}, $PM_{2.5}$, and lead set at each STRU. Permit limit was derived from computer dispersion modeling to comply with applicable NAAQS and lead health benchmarks, including daily compliance calculations and recordkeeping, unless emissions were calculated at design capacity. Prohibited Emissions. Releasing emissions of pollutants from sources other than what was specified in the dispersion model is prohibited unless authorized under a major amendment.
STRU 1 (Smog Hog #15 Stack) STRU 15 (Smog Hog #1 Stack) STRU 16 (Smog Hog #2 Stack) STRU 17 (Smog Hog #3 Stack) STRU 20 (Smog Hog #6 Stack) STRU 23 (Smog Hog #9 Stack) STRU 24 (Smog Hog #10 Stack) STRU 25 (Smog Hog #11 Stack) STRU 26 (Smog Hog #12 Stack)	40 CFR 70.2 & Minn. R. 7007.0200, Minn. R. 7017.2020, subp. 1	Stack testing to verify compliance with emission limits for PM_{10} and $PM_{2.5}$.
	Minn. R. 7017.2020, subp. 1 Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Stack testing to verify compliance with emission limits for lead.

Subject item*	Applicable regulations	Rationale
STRU 30 (Smog Hog #16 Stack) STRU 31 (Smog Hog #17 Stack) STRU 32 (Smog Hog #18 Stack) STRU 33 (Smog Hog #19 Stack) STRU 34 (Smog Hog #20 Stack) STRU 57 (North Building Vent 20) STRU 73 (Battery Terminal Post Coater Stack) STRU 74 (Smog Hog #5 Stack) STRU 75 (Smog Hog #8 Stack)		
TREA 1 (Smog Hog #15) TREA 25 (Smog Hog #1) TREA 26 (Smog Hog #2) TREA 27 (Smog Hog #3) TREA 30 (Smog Hog #6) TREA 33 (Smog Hog #9) TREA 34 (Smog Hog #10) TREA 35 (Smog Hog #11) TREA 36 (Smog Hog #12) TREA 39 (Smog Hog #16) TREA 40 (Smog Hog #17) TREA 41 (Smog Hog #18) TREA 42 (Smog Hog #19) TREA 43 (Smog Hog #20) TREA 52 (HEPA Filter – Tool Room 1 Abrasive Blasting) TREA 53 (HEPA Filter – Tool Room 2 Abrasive Blasting) TREA 54 (HEPA Filter – DC Abrasive Blasting) TREA 55 (HEPA Filter – EQUI 84) TREA 56 (HEPA Filter – EQUI 88) TREA 57 (HEPA Filter –	40 CFR § 70.2	Limits to Avoid Part 70. Control efficiency and other operating requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds. Limits reflect that the units have total enclosures and operate at the limited throughputs or defined throughputs. Permit specifies that replacement equipment must meet the requirements under the TREA being replaced.

Subject item*	Applicable regulations	Rationale
EQUI 95) TREA 58 (HEPA Filter – EQUI 219) TREA 59 (HEPA Filter – EQUI 220) TREA 78 (Smog Hog #5) TREA 79 (Smog Hog #8)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling. The permit requires installation, operation, and maintenance of control equipment at the minimum overall control efficiency assumed in the dispersion model.
TREA 60 (Nederman Filter 15N - STRU 1) TREA 61 (Nederman Filter 1N - STRU 15) TREA 62 (Nederman Filter 2N1 - STRU 16) TREA 63 (Nederman Filter 2N2 - STRU 16) TREA 64 (Nederman Filter 3N - STRU 17) TREA 65 (Nederman Filter 4N - STRU 74) TREA 66 (Nederman Filter 6N - STRU 20) TREA 67 (Nederman Filter 7N - STRU 75) TREA 68 (Nederman Filter 9N - STRU 23) TREA 69 (Nederman Filter 10N - STRU 24)	40 CFR § 70.2	Limits to Avoid Part 70. Control efficiency and other operating requirements to limit $PM_{10}/PM_{2.5}$ potential to emit to below Part 70 thresholds. Limits reflect that the units have total enclosures. Permit specifies that replacement equipment must meet the requirements under the TREA being replaced.
TREA 70 (Nederman Filter 11N - STRU25) TREA 71 (Nederman Filter 12N1 - STRU26) TREA 72 (Nederman Filter 12N2 - STRU26) TREA 73 (Nederman Filter 16N - STRU30) TREA 74 (Nederman Filter 17N - STRU31) TREA 75 (Nederman Filter 18N - STRU32) TREA 76 (Nederman Filter 19N - STRU33) TREA 77 (Nederman Filter 20N - STRU34)	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	NAAQS Modeling. The permit requires installation, operation, and maintenance of control equipment at the minimum overall control efficiency assumed in the dispersion model.

3. Technical information

3.1 Calculations of potential to emit

3.1.1. Battery terminal post coaters

Unrestricted potential to emit

Emissions from battery terminal post coaters (coaters) are mainly VOCs but also include PM/ PM_{10}/ $PM_{2.5}$ from coaters that use spray applications. The specific VOC being regulated as an air toxic is t-DCE, and it is conservatively assumed that all VOC in t-DCE VOC coatings is t-DCE. The reason for this conservative assumption is because the exact content of t-DCE in the VOC coatings was certified as not public data by MPCA on January 25, 2019. In order to show compliance with permit limits, the data to be used must be public as it is considered emission's data as defined at in 40 CFR 2.301(a)(2)(i). Therefore, the only data that can be used for determining compliance with t-DCE limitations is the VOC content of coating material which has been disclosed as public data. The VOC content is a conservative estimate of t-DCE because there are other VOCs in the VOC coating formulations. Unrestricted VOC emissions were calculated through a mass balance approach using the maximum coating capacity of the coater and the maximum VOC content (weight fraction) of each coating specified by their respective safety data sheet (SDS), laboratory analysis (water-based coating), or ASTM testing method (UV coating). VOC content below detection level was conservatively assumed to be present at minimum detection levels (MDL). Therefore, maximum potential to emit for VOCs was calculated, in pounds per hour (lb/hr) and tons per year (ton/yr), as follows:

Maximum Hourly VOC Emissions (lb/hr) = [Maximum Coating Application Rate (lb/hr)] x [Maximum VOC Content of Coating (wt. %)]

Maximum Annual Emissions of VOC (ton/yr) = [Maximum Hourly Emissions (lb/hr)] x [24 hour/day] x [365 day/year] / [2000 lb/ton]

Similarly, the potential to emit for PM/PM_{10}/$PM_{2.5}$ from coaters using a spray application is also calculated though a mass balance approach using the coater's maximum coating application rate, the maximum solids content of any coating used at the facility, and, for t-DCE VOC and water-based coatings, the minimum transfer efficiency of the spray gun. The minimum spray gun transfer efficiency for t-DCE VOC and water-based coatings was reported as 65 percent, consistent with EPA guidance for a low volume, low pressure (LVLP) spray guns. Since no specific transfer efficiency was available for the UV coating spray nozzles, the facility was required to conduct a performance test to determine PM/PM_{10}/$PM_{2.5}$ emission factors under Permit No. 12300341-004. Therefore, maximum potential to emit for PM/PM_{10}/$PM_{2.5}$ from spray t-DCE VOC and water-based coaters are calculated as follows:

Maximum Hourly Emissions of PM/PM_{10}/$PM_{2.5}$ (lb/hr) = [Maximum Coating Application Rate (lb/hr)] x [Maximum Solids Content in Coating (wt. %)] x [1- Transfer efficiency (fraction)]

Maximum Annual Emissions of PM/PM_{10}/$PM_{2.5}$ (tpy) = [Maximum Hourly Emissions (lb/hr)] x [24 hour/day] x [365 day/year] / [2000 lb/ton]

The emission factors resulting from the UV coater performance test performed on June 22, 2021, were determined and will be used in emissions calculations until the next performance test as follows*:*

Maximum Hourly Emissions of PM/ PM_{10}*/$PM_{2.5}$ (lb/hr) = [Maximum Coating Application Rate (lb/hr)] x [PM/PM_{10}/$PM_{2.5}$ Emission Factor (lb/lb)]*

Maximum Annual Emissions of PM/PM_{10}/$PM_{2.5}$ (tpy) = [Maximum Hourly Emissions (lb/hr)] x [24 hour/day] x [365 day/year] / [2000 lb/ton]

Using the solid content in each coating, it was assumed that PM_{10} and $PM_{2.5}$ emissions are each equal to PM emissions. Although this approach is conservative for filterable PM/PM_{10}/$PM_{2.5}$ and does not account for possible formation of condensable PM aerosols, compliance determinations will require assessment of condensable particulates to ensure compliance. The maximum coater capacity, VOC solvent, water-based coating VOC content, UV coating VOC content, coating solids content, UV coating emission factors at the time of permit issuance, and minimum spray gun transfer efficiency allowed by the permit are listed in Appendix B to the permit.

Limited potential to emit

Unlike unrestricted PTE, limited PTE calculations take into account federally-enforceable limits or operation restrictions. Therefore, limited emissions may be calculated by taking into account permit limits, including but not limited to emission limits, coating usage limits, VOC and solids content limits, limits on hours of operation, minimum transfer efficiencies, and capture and control efficiencies on pollution control equipment. For emissions from battery terminal post coaters, the permit has federally-enforceable limits on VOC and PM/PM_{10}/$PM_{2.5}$emissions that may not be exceeded and also includes compliance demonstration conditions (Section 3.3). The permit has state-only enforceable limits on t-DCE emissions that may not be exceeded and also includes compliance demonstration conditions (Section 3.3). Therefore, the facility's limited PTE for these pollutants is equal to the permit limit.

3.1.2. t-DCE emissions outside coating rooms

Emissions of t-DCE inside the facility building but outside of coating rooms, including the chemical storage room, were calculated using measured indoor air concentrations of the pollutant. This separate accounting was included because the t-DCE solvent usage requirements measure what is used in the VOC coating room and there are minor but measurable sources of t-DCE solvent evaporation outside coating rooms. Due to the large amount of data available, a 95 percent upper confidence limit (UCL) was calculated using one full year of indoor air sampling data. The upper bound of the 95 percent UCL was used to represent the highest indoor t-DCE concentration at any given time. For non-coating rooms other than the chemical storage room, the total daily contribution was determined to be insignificant when compared to the facility's permit limit. Indoor air t-DCE concentrations in the chemical storage room were deemed significant enough to be required to be included in daily t-DCE calculations. The daily t-DCE emissions from the chemical storage room are calculated as follows:

t-DCE Emissions Outside Coating Rooms (ton/day) = [Measured t-DCE concentration (ug/m3)] x [Chemical storage room ventilation rate (ft3/min)] / [35.31 ft3/m3] x [60 min/hr] x [g/1,000,000 ug] / [453.6 g/lb] x [2000 lb/ton] x [60 min/hr] x [24 hr/day]

3.1.3. Lead processing units

Unrestricted potential to emit

Emissions from lead melt pots, die casting units, and billet saws include lead, PM, PM_{10}, and $PM_{2.5}$ (PM_{10} and $PM_{2.5}$ emissions were conservatively assumed to be equal to each other). Emissions are calculated through a mass balance approach using the maximum hourly lead-containing material throughput and the uncontrolled emission factor described later in this section. Therefore, maximum unrestricted PTE for lead, PM, PM_{10}, and $PM_{2.5}$ is calculated as follows:

Maximum Uncontrolled Hourly Emissions of Lead (lb/hr) = [Maximum Hourly Process Throughput (lb/hr)] x [Uncontrolled Emission Factor (lb lead/lb lead-containing material)]

Maximum Uncontrolled Annual Emissions of Lead (ton/year) = [Maximum Uncontrolled Hourly Emissions of Lead (lb/hr)] x [24 hour/day] x [365 day/year] / [2000 lb/ton]

Maximum Uncontrolled Hourly Emissions of PM (lb/hr) = [Maximum Hourly Process Throughput (lb/hr)] x [Uncontrolled Emission Factor (lb PM/lb lead-containing material)]

Maximum Uncontrolled Annual Emissions of PM (ton/year) = [Maximum Uncontrolled Hourly Emissions of PM (lb/hr)] x [24 hour/day] x [365 day/year] / [2000 lb/ton]

Maximum Uncontrolled Hourly Emissions of PM_{10} (lb/hr) = [Maximum Hourly Process Throughput (lb/hr)] x [Uncontrolled Emission Factor (lb PM_{10}/lb Lead-containing material)]

Maximum Uncontrolled Annual Emissions of PM_{10} (ton/year) = [Maximum Uncontrolled Hourly Emissions of PM_{10} (lb/hr)] x [24 hour/day] x [365 day/year] / [2000 lb/ton]

Maximum Uncontrolled Hourly Emissions of $PM_{2.5}$ (lb/hr) = [Maximum Hourly Process Throughput (lb/hr)] x [Uncontrolled Emission Factor (lb $PM_{2.5}$/lb Lead-containing material)]

Maximum Uncontrolled Annual Emissions of $PM_{2.5}$ (ton/year) = [Maximum Uncontrolled Hourly Emissions of $PM_{2.5}$ (lb/hr)] x [24 hour/day] x [365 day/year] / [2000 lb/ton]

Unrestricted PTE is required to be calculated in order to determine program applicability, such as PSD and Part 70, and if additional limits are required to remain below these programs and other standards (i.e., Industrial Process Equipment Rule). Since none of the casting units had a material throughput certified by the manufacturer, the facility was asked to estimate each casting unit's maximum short-term throughput. This was done by weighing each unit of lead-containing material loaded into the casting unit ("shot") and estimating the number of "shots" per eight-hour shift for that casting unit to obtain the maximum short-term throughput, in tons per hour, for each casting unit. The resulting throughputs were used in the equations above to obtain unrestricted potential to emit for each casting unit and billet saw. Spreadsheets in Attachment 1 to this TSD contains detailed calculations showing how short-term throughputs were derived.

Limited potential to emit

Unlike unrestricted PTE, limited PTE calculations take into account federally enforceable emission limits or operation restrictions. Therefore, limited emissions may be calculated by taking into account permit limits, including but not limited to emission limits, material throughput limits, limits on hours of operation, approved emission factors and/or minimum control efficiencies on pollution control equipment. For lead and PM/PM_{10}/$PM_{2.5}$emissions from lead processing units, the permit has federally-enforceable limits on lead and PM/PM_{10}/$PM_{2.5}$emissions, including compliance demonstrations (Section 3.3), that may not be exceeded; therefore, the facility's limited PTE from these units are equal to their respective permit limits.

Uncontrolled emission factors

Uncontrolled emission factors for PM, PM_{10}, and $PM_{2.5}$were derived from a June 2021 performance test of a Nederman filter and Smog Hog control equipment train. Recurring performance testing on an annual basis of select control equipment trains are required by the permit to verify emission factors, overall control efficiency, and compliance with stack emission limits (Section 3.4)

Controlled emission factors

Controlled emission factors for captured lead emissions were derived from a stack test conducted in November 2018. The stack test measured emission rates from one of each Smog Hog configuration,

including single pass and double pass. Some emission factors are being extrapolated to representative emission units and associated control equipment as not all emission units or control equipment were tested. Since outlet emission rates were measured as pure lead, controlled emission factors for lead were obtained by first converting the lead-containing material throughput to pure lead throughput as follows:

Lead Throughput (lb/hr) = [Hourly Lead-Containing Material Throughput during Test (lb/hr)] x [Lead Content of Lead-Containing Material (lb lead/lb lead-containing material)]

The average hourly lead-containing material throughput was obtained by averaging the total lead-containing material throughput for the three test runs conducted. The maximum lead content of the lead-containing material was calculated as follows:

Lead Content of Lead-Containing Material (%) = [100%] – [Total Non-Lead Metal Content (%)]

The total non-lead content was obtained from the material specification sheet required by the facility. From this, the calculated lead content for each lead-containing material used at the facility ranged from 95 to 99.98 percent. With the lead content known, the controlled emission factor for lead may be calculated as follows:

Controlled Emission Factor for Lead (lb lead/lb lead-containing material) = [Average Hourly Lead Emissions at Test Outlet (lb lead/hr)] / [Lead-Containing Material Throughput (lb lead-containing material/hr)]

A maximum lead content of lead-containing material of 95 percent was used and is the maximum allowable in lead emissions calculations. As shown in the equations above, a lower lead content produces a lower lead-containing material throughput and, therefore, a higher controlled emission factor for lead. The higher controlled emission factor will produce higher calculated lead emissions for any given lead-containing material throughput, thus providing a more conservative estimation of emissions.

Uncaptured and captured emissions

During the die casting process, emissions escape the equipment casing before being vented to control equipment (uncaptured emissions). Therefore, the relative amount of emissions escaping in this manner had to be estimated. Compilation of Air Pollutant Emission Factors (AP-42), Chapter 12.11 Secondary Lead Processing describes this phenomenon and estimates that five percent of total uncontrolled emissions escape capture. Therefore, for modeling purposes, uncaptured PM/PM_{10}/$PM_{2.5}$and lead was estimated using known throughputs and emission factors from performance testing. Since these emissions are not captured by control equipment, it was assumed that all uncaptured emissions were emitted from the nearest building vent. The permit specifies to which vent uncaptured emissions from each unit must be vented. The permit also specifies that all other emissions (captured) must vent to control equipment whenever in operation. For other lead emission units, such as melt pots, the permit requires a total enclosure in which all emissions must vent. Therefore, no uncaptured emissions needed to be estimated.

3.1.4. Abrasive blasting

Unrestricted potential to emit

Unrestricted particulate emissions from abrasive blasting operations were calculated using maximum flow rates, material densities, and emission factors from STAPPA/ALAPCO Abrasive Blasting guidance (5/91). The emissions calculations assumed each manual abrasive blasting unit utilizes one spray gun with a 0.25-inch diameter tip size at a maximum pressure of 90 pounds per square inch (psi) using glass

beads as abrasive media. From the spray gun tip diameter and pressure, the sand flow rate was determined from the chart provided in the STAPPA/ALAPCO Abrasive Blasting Guidance. Due to the density difference between sand and glass beads, the flow rate of sand obtained from the chart had to be corrected for the flow rate of glass bead media, as follows:

Flow Rate of Glass Beads (lb glass/hr) = [Flow Rate of Sand (lb sand/hr)] x [(Density of Glass Beads (lb glass/ft3)) / (Density of Sand (lb sand/ft3))]

After finding the true flow rate of the abrasive (glass beads), the unrestricted hourly and annual emissions from abrasive blasting units may be calculated as follows:

Unrestricted Hourly Emissions of PM/PM_{10}/$PM_{2.5}$ (lb/hr) = [Maximum Abrasive Flow Rate (lb abrasive/hr)] x [Emission Factor (lb pollutant/lb abrasive)]

Unrestricted Annual Emissions of PM/PM_{10}/$PM_{2.5}$ (ton/yr) = [Unrestricted Hourly Emissions of PM/PM_{10}*/$PM_{2.5}$ (lb/hr)] x [8760 hr/yr] / [2000 lb/ton]*

It was assumed that PM_{10} and $PM_{2.5}$ emissions are each equal to PM emissions to obtain a conservative result.

Limited potential to emit

Limited hourly and annual emissions from abrasive blasting are calculated using control efficiencies provided by HEPA filtration (Section 3.2) and is obtained as follows:

Maximum Controlled Hourly Emissions of PM/PM_{10}/$PM_{2.5}$ (lb/hr) = [Maximum Abrasive Flow Rate (lb abrasive/hr)] x [1 – Control Efficiency (fraction)]

Maximum Controlled Annual Emissions of PM/PM_{10}/$PM_{2.5}$ (ton/yr) = [Maximum Controlled Hourly Emissions of PM/PM_{10}/$PM_{2.5}$ (lb/hr)] x [8760 hr/yr] / [2000 lb/ton]

Lead emissions

Abrasive blasting is primarily used to remove metal residues from die casting tools, specifically lead residue. As a result, in addition to calculating PM/PM_{10}/$PM_{2.5}$ emissions from these units, lead emissions were also estimated using the same calculation methods given above. A lead emission factor, in pounds of lead emitted per pound of abrasive blasted, was derived from the Background Document in AP-42 Chapter 13.2.6, Tables 4 and 5, conservatively assuming that the lead covers 100 percent of the tool surface and that the composition of the residue is 100 percent lead.

Compliance demonstration

Controlled emissions from abrasive blasting EQUI 113 and 114 vent to a common stack STRU 57. EQUI 113 and 114 were modeled assuming controlled emission rates. There are no daily calculations of emissions because these were modeled at rated capacity but there are requirements to test emissions at STRU 57 to verify compliance with emission limits.

The DC abrasive blasting EQUI 115 shares stacks (STRU 43 and STRU 50) that have an enforceable emission limit with associated compliance demonstration by means of daily emission calculations at STRU 43 and 50. EQUI 115 was modeled at rated capacity for all pollutants.

Uncaptured emissions from EQUI 124 (die casting unit), which shares STRU 43 with EQUI 115 emissions and two makeup air units (EQUI 106 and EQUI 109), is required to show compliance with applicable emission limits by means of daily calculations because it was not modeled at design capacity. The

contribution from EQUIs 106, 109, and 115 unrestricted potentials to emit were added to the calculation to demonstrate compliance with from the modeled emission rate for PM_{10} and $PM_{2.5}$. Only the contribution from EQUIs 115 unrestricted potential to emit was added to the calculation to demonstrate compliance with from the modeled emission rate for lead NAAQS at STRU 43 because the lead emissions from EQUIs 106 and 109 are orders of magnitude lower. The die cast units are subject to a facility-wide limit on a 365-rolling sum basis. Since EQUI 115 was modeled at rated capacity, the 365-day rolling sum of lead emissions at STRU 43 were not included as this will count towards the facility-wide cap on annual lead emissions from die cast.

Likewise, uncaptured emissions from EQUI 125 and EQUI 126 (die casting units), which shares STRU 50 with EQUI 115, one makeup air unit (EQUI 109) and a water-based dip/drip coater (EQUI 116), is required to show compliance with applicable PM_{10} and $PM_{2.5}$ emission limits by means of daily calculations because EQUI 125 and EQUI 126 were not modeled at design capacity. The contribution from EQUIs 109 and 115 unrestricted potential to emit were added to the calculation to demonstrate compliance with from the modeled emission rate for PM_{10} and $PM_{2.5}$ at STRU 50. Only the contribution from EQUIs 115 unrestricted potential to emit was added to the calculation to demonstrate compliance with from the modeled emission rate for lead NAAQS at STRU 50 because the lead emissions from EQUIs 109 are orders of magnitude lower. Since EQUI 115 was modeled at rated capacity, the 365-day rolling sum of lead emissions at STRU 50 were not included as this will count towards the facility-wide cap on annual lead emissions from die cast. Additionally, the permit does not have flexibility provisions for the abrasive blasting.

Performance testing to demonstrate compliance with $PM_{10}/PM_{2.5}$ and lead is required at STRU 57 (venting controlled emissions from abrasive blasting EQUI 113 and 114) to verify controlled emission rates for the abrasive blasting units that were used for modeling. This is because the claimed controlled efficiencies from TREA 52 (HEPA Filter) are relatively high. This will also serve to verify emission calculations for EQUI 115 as the same calculation method was used.

3.1.5. Combustion

The facility has several combustion units, including melting pot heaters, a natural gas bake oven, makeup air units (MAUs), roof top units (RTUs), and space heaters, many of which have potential emissions below the thresholds listed at under Minn. R. 7007.1300, subp. 3(F). Since the permit requires limits on nitrogen oxide (NOx) emissions to meet applicable NAAQS, these units are no longer insignificant activities and have been added to the subject item inventory. Uncontrolled PTE of criteria pollutants, HAPs, and greenhouse gas (GHG) emissions from natural gas-fired melting pot heaters, a natural gas bake oven, MAUs, RTUs and space heaters were calculated using emission factors from AP-42, Chapter 1.4, Table 1.4-2, 1.4-3, and 1.4-4. Emission factors for GHG emissions were obtained from 40 CFR pt. 98. Uncontrolled combustion emissions from the emergency generator were calculated using emission factors from AP-42, Chapter 3.3, Table 3.3-1 (criteria pollutants), Table 3.3-2 (HAPs) and 40 CFR pt. 98 (GHG).

Calculation of lead emissions at stacks where MAUs share with die cast and abrasive blast units were not included as the lead emissions from MAUs are very small compared to lead processing units.

3.1.6. Fugitive emissions

40 CFR § 52.21(b)(20) defines fugitive emissions as emissions "… which could not reasonably pass through a stack, chimney, or other functionally-equivalent opening." Sources of fugitive $PM/PM_{10}/PM_{2.5}$ emissions from the facility were defined for paved road traffic and cooling towers and included in dispersion modeling to determine facility impacts on ambient PM_{10} and $PM_{2.5}$ concentrations. PM_{10} and $PM_{2.5}$ were conservatively assumed to be equal to PM emissions.

Paved roads

Paved road emissions were calculated using equations from AP-42 Chapter 13, Section 13.2.1 (01/11). The silt loading value obtained for corn wet mills (Table 13.2.1-3) was assumed to be representative of paved roads at Water Gremlin because no material handling occurs outdoors, and outdoor material storage piles are not maintained at either facility. Paved roads used for employee parking were not evaluated per MPCA guidance.

Cooling towers

The cooling towers at the facility are used to dissipate large heat loads to the atmosphere. Because wet cooling towers provide direct contact between the cooling water and the air passing through the tower, some of the liquid water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Therefore, the particulate matter constituent of the drift droplets derived from total dissolved solids (TDS) in the cooling water may be classified as an emission. Fugitive PTE from both cooling towers was calculated using AP-42 Chapter 13, Section 13.4 (Rev 01/95) using procedures described for source-specific TDS content.

3.1.7. Remediation stack

Controlled Emissions

The MPCA's Remediation Division requires that emissions from the remediation stack are controlled by two 2,000-pound granulated activated carbon (GAC) canisters connected in-series (TREA 50 and TREA 51) as described in Section 3.2.3 below. The remediation stack vents emissions from the required operation of the Sub-Slab Depressurization and Solvent Vapor Extraction system. The permit requires sampling of the remediation system stack (STRU 41) in accordance with the requirements of the MPCA Remediation Division to determine emission rates. When required, emissions must be reported. t-DCE emissions are calculated as follows:

t-DCE Emissions (pounds/day) = [Measured t-DCE Remediation Stack Concentration (ug/L)] x [Remediation Stack Ventilation Rate (ft3/min)] x [28.32 L/ft3] x [60 min/hr] / [1,000,000 ug/g] / [453.6 g/lb] x [24 hr/day]

Uncontrolled Emissions

The permit application includes modeling of uncontrolled emissions from the remediation stack in the event the MPCA's Remediation Division determines operation of the GAC canisters is no longer required. The uncontrolled emissions were determined by calculating emission rates based on SSDS/SVE influent (prior to control) data obtained on January 28, 2022 and using the highest influent concentration. The AERA analysis includes the analysis of uncontrolled emissions from the remediation stack, so even if this operation scenario were to occur, the risks from this to human health were determined to be within acceptable ranges. The modeled uncontrolled emission rates for t-DCE and TCE are included in the permit as an emission limitation to provide the public assurances that even very small sources of t-DCE and TCE from the mitigation system were included in the assessment of health impacts. The uncontrolled t-DCE emissions from the remediation stack are several orders of magnitude smaller than the emission limit from coating operations and therefore are not included in the calculation to demonstrate compliance with this limit. In addition, the emissions from the mitigation stack are not expected to increase due to the permit conditions on coating operations, material handling of VOC and the solvent vapor mitigation system.

3.1.8. Tin processing units

The facility also manufactures tin sinkers as part of their lead-free fishing tackle line. The facility has one electric melt pot dedicated to tin only where hot metal is either die casted or extruded into wire and cut with the billet saw (also used for lead sinker production). Particulate emissions from tin processing were calculated using the same emission factors that were used for the lead melt pots and billet saw (Section

3.1.2). Other activities, including cold forming (coining), hot/cold extrusion, and packaging processes qualify as insignificant activities not required to be listed under Minn. R. 7007.1300, subp. 2.C(2).

3.1.9. Insignificant activities required to be listed

Certain activities were verified to be below insignificant thresholds described in Minn. R. 7007.1300, subp. 3(F). VOC emissions from parts washing were calculated using mass balance from maximum materials content and maximum throughout, assuming 100 percent of VOCs used are emitted. Other insignificant activities conducted at the facility include intermittent welding and brazing activities for which emissions estimation and testing is not feasible.

Attachment 1 to this TSD contains a summary of the PTE of the Facility, including detailed spreadsheets and supporting information prepared by the MPCA and the Permittee.

3.2 Pollution control equipment

The facility was required to install, operate, and maintain pollution control equipment at the minimum overall control efficiency assumed in the model. This section describes the pollution control equipment installed, pollutant capture efficiency, and maintenance actions required by the permit.

3.2.1. Lead processing units

Melting pots release emissions of lead and PM due to the heating of lead ingots and handling of molten lead. Die casting units use mineral oil as a lubricant on die tool surfaces to promote smooth release of parts from casting tools. As a result, the mineral oil is atomized and released into the air due to pressure release from die tools, resulting in PM and lead emissions. To control these captured emissions, the facility has added Nederman mist eliminators with HEPA filtration to the majority of lead melt pots and die casting units at the facility. The mist collector plates trap atomized mineral oil in the exhaust gas using the inertia present in the oil droplets. Particles not trapped by collector plates are then captured by the HEPA filter.

To achieve additional control of captured PM/PM_{10}/$PM_{2.5}$, the die casting units and lead melt pots will each continue to vent to low-efficiency electrostatic precipitator (ESP), also known as a Smog Hog, connected in-series with a Nederman filter. Single pass Smog Hogs are configured such that particles in exhaust gas become charged and then pass over oppositely-charged collector plates. The charged particles then attach to the oppositely-charged collector plates, and the cleaned air exits the unit. Double-pass Smog Hogs act the same as single-pass but the pollutant-laden gas passes over two sets of collector plates (longer collection path) with double the power, thus achieving greater pollution control. With the addition of the Nederman filters, the overall pollution control efficiency for lead processing units was assumed to be greater than or equal to 86.6 percent. Therefore, the permit will require a minimum of 86.6 percent control efficiency for PM/PM_{10}/$PM_{2.5}$for units controlled by combination mist eliminators with HEPA filtration. The Permittee is required to operate and maintain Nederman filters at all times whenever lead processing units are in operation, including performance testing (Section 3.4), periodic inspections, cleaning, filter replacement, and recordkeeping.

3.2.2. Spray coaters

The Permittee is required to operate individual HEPA filters on most spray coaters. The uncontrolled emissions from most spray coaters are captured and controlled with HEPA filters before emissions are released from coating rooms through the common stack (STRU 73). Based on manufacturer's specifications, the facility assumed 99 percent control efficiency of PM/PM_{10}/$PM_{2.5}$ emissions from controlled spray coating operations. This level of control efficiency is needed in order to comply with applicable NAAQS. The permit enforces the minimum control efficiency of the HEPA filter and requires that it be in operation at all times, including performance testing (Section 3.4), periodic inspections, cleaning, filter replacement, and recordkeeping. Certain UV coaters, which use spray application, are not

required to operate with HEPA filters. These units were modeled for compliance with PM_{10} and $PM_{2.5}$ NAAQS while using uncontrolled emission rates.

3.2.3. Solvent vapor remediation system

A permanent sub-slab depressurization and solvent vapor extraction system with two 2,000-pound GAC canisters connected in-series has been installed at the facility to extract and capture solvent vapors from the vapor space below the North Building floor. The plumbing, blower fan, and carbon canisters collectively make up the solvent vapor remediation system (COMG 9). Vapor phase carbon design loading modeling performed by the manufacturer, H2K Technologies, utilized the average of the ten highest sub-slab vapor concentrations for TCE and t-DCE treated by 2,000 pounds of GAC. The modeling data shows TCE breakthrough of the lead (first) canister at 300 days, and no t-DCE breakthrough of the lead (second) canister prior to 300 days. Therefore, there is reasonable assurance the carbon filtration system demonstrates 100 percent control of TCE and t-DCE emissions over 300 days of continuous operation.

Sampling and analysis of influent between TREA 50 and TREA 51 conducted through September 2019 showed reduction higher than 95 percent for TCE, t-DCE and other chlorinated organic compounds of interest. This is indicative that uncontrolled emissions have achieved asymptotic levels. Sampling and analysis of uncontrolled emissions conducted in January of 2022 at the solvent vapor remediation system stack (STRU 41) confirmed very low uncontrolled emissions of t-DCE as compared to the t-DCE emission limit for COMG 1. The Permittee conducted an air toxic analysis using the uncontrolled emissions from COMG 9 and showed impacts in compliance with MPCA approved health benchmarks. Because of this, the compliance emission calculations for t-DCE will not include emissions from COMG 9.

At the time of permit issuance, the MPCA Remediation Division requires the Permittee to operate and maintain the solvent vapor remediation system at all times, including gas sampling, periodic inspections, periodic GAC canister replacement, and recordkeeping. The permit requires the Permittee to operate the GAC canisters as described in the permit for as long as this is required by the MPCA Remediation Division.

3.2.4. Abrasive blasting

The facility operates abrasive blasting units at the facility that emit PM/PM_{10}/$PM_{2.5}$and lead as described in Section 3.1.4. In order to comply with the PM_{10} and $PM_{2.5}$ NAAQS standards, the facility is capturing and controlling all emissions with a HEPA filter installed on each blasting media collection exhaust system. The HEPA filters are rated by the manufacturer to achieve 99.9 percent control efficiency of particulate emissions. The Permittee is required to operate and maintain the HEPA filtration system at all times, including during periodic inspections, replacement, and recordkeeping.

3.3 Compliance demonstrations

The facility was required to accept state and federally-enforceable emission and operation limits such that the facility remains protective of all applicable health benchmarks and NAAQS standards, including limits on emissions to avoid PSD regulations and Part 70 applicability. This section describes the actions required by the permit for the facility to demonstrate compliance with limits enforced by the permit.

3.3.1. VOC limits

The permit contains a federally-enforceable limit of 90 tons per year on VOC emissions applicable to coating operations such that the facility remains below PSD and Part 70 permitting thresholds. To demonstrate continuing compliance with the limit on a monthly basis based on daily operating records, the permit requires that the facility track daily usage of VOC-containing materials, including (but not limited to) VOC coating, water-based coating, UV coating, VOC solvent recovered from the distiller, VOC that exits the facility as waste, and other VOC-containing material on a daily basis.

The permit includes Material Content requirements, which establish the maximum allowable VOC content of the VOC coatings used at the facility. While the VOC coatings contain the largest proportion of VOCs, there are small amounts of VOCs released by water-based coatings and UV coatings that must be used in VOC calculations to demonstrate compliance with the 90 ton per year limit. Using daily usage records and material VOC contents as determined by the Material Content requirement in Appendix B of the permit, the facility is required to calculate monthly VOC emissions using formulas specified in the permit and record total VOC emissions for each operating month. Finally, the permit requires the facility to calculate and record the 12-month rolling sum of VOC emissions for the previous 12-month period. Other sources of VOCs are combustion sources which amount to much less than 10 tons per year so that there is enough compliance to keep the facility under 100 tons per year of allowable VOC emissions.

3.3.2. t-DCE limits

The permit contains a state-enforceable limit of 32.6 tons per year on t-DCE emissions such that ambient concentrations of t-DCE remain below the MDH chronic inhalation Risk Assessment Advice (RAA) health benchmark of 20 micrograms per cubic meter, as described in the AERA conducted and the discussion on the weight of evidence approached used in the technical analysis in support of this permit action (Section 3.6 and Attachment 1 and 1.a). Operating records from 2021 and 2022 and ambient air measured concentrations of t-DCE demonstrate that Water Gremlin operated at emission levels of t-DCE which are very close to the limit determined to protect human health. Given the thin margin of compliance based on actual operations in 2021 and 2022, the MPCA deemed it prudent and necessary to require daily compliance demonstrations based on a 365-day rolling sum of t-DCE emissions. Daily compliance demonstration will enable Water Gremlin to discover exceedances to the t-DCE limit and to implement corrective actions much sooner than if the compliance verification is done on a monthly basis.

In order to demonstrate continuous compliance with the limit on a daily basis, the permit requires that the facility track all t-DCE-containing materials, including (but not limited to) t-DCE containing material usage, t-DCE recovered from the distiller, t-DCE that is reused, t-DCE that exits the facility as waste on a daily basis. The t-DCE usage, t-DCE recycling in the coating room, t-DCE recovered from the distillation unit and what leaves the facility is tracked by manually weighing the t-DCE-containing materials on a daily basis.

The tracking of t-DCE is done by conservatively assuming that all VOC in VOC coatings is t-DCE. The reason for this conservative assumption is because the exact content of t-DCE in the VOC coatings was certified as not public data by MPCA on January 25, 2019. In order to show compliance with permit limits, the data to be used must be public as it is considered emission's data as defined at in 40 CFR 2.301(a)(2)(i). Therefore, the only data that can be used for determining compliance with t-DCE limitations is the VOC content of coating material which has been disclosed as public data. The VOC content is a conservative estimate of t-DCE because there are other VOCs in the VOC coating formulations. As noted above, the permit includes Material Content requirements, which establish the maximum allowable content of the VOC coatings used at the facility.

The MPCA considered the requirement to use automatic meters on each coater to track t-DCE usage in the coating room, which is the highest figure in the computation of t-DCE emissions. Properly maintained and operated automatic coating meters minimizes the potential for error and increases consistency compared to manual measurements recorded by multiple workers. The MPCA discussed this option with Water Gremlin, and they explained this was not a viable option for operations at this facility. While automatic coating meters are more commonly used in automated coating operations, the t-DCE coating operations at Water Gremlin are done with a significant amount of manual labor. Another aspect of the use of solvent and coatings that makes is difficult to use automatic meters is the fact that

while the t-DCE coating material is applied and some of it (excess that drips to the bottom of the coater) is reused at the coater. Additionally, a fraction of what is used in coaters is manually recovered, weighed, and sent to the distillation unit outside the coating room for cleaning before it is returned to the coating room for reuse. The recovered solvent to be cleaned is collected and recovered in batches, which is not how automatic readers usually work. Instead, Water Gremlin proposed in the permit application a detailed protocol for daily tracking based on manual weighing that they had been using to comply with the Administrative Order, with some revisions. The proposed tracking protocol was reviewed and approved by MPCA to be used in the permit. In order to verify the reliability of the manual methods to directly measure the t-DCE usage, the permit includes the use of a Continuous Emission Monitor System (CEMS) installed at the coating room stack and also requires quarterly audits based on solvent purchase records and inventory at hand. These verification requirements are further explained at 3.3.8 below.

The permit defines the type of t-DCE formulation that can be used and requires the use of specific manufacturer's information on the composition of the t-DCE containing material (Material Content requirement) for compliance demonstration. Using daily usage records and material t-DCE contents as determined by the Material Content requirement of the permit, the facility is required to calculate t-DCE emissions using formulas specified in the permit and record total t-DCE emissions for each operating day, including emissions from evaporation loses outside coating rooms. Finally, the permit requires the facility to calculate and record the 365-day rolling sum of t-DCE emissions for the previous 365-day period.

3.3.3. $PM_{10}/PM_{2.5}$ limits

The permit contains federally enforceable limits on PM_{10} and $PM_{2.5}$ emissions such that the facility remains below Part 70 permitting thresholds (synthetic minor limits), and to comply with applicable NAAQS standards for PM_{10} and $PM_{2.5}$. The permit includes Material Content requirements, which establish the maximum allowable solid content of the VOC and water-based spray coatings used at the facility. The facility will show compliance with the emission limits by establishing maximum allowable material usage, or process throughput, enforceable control equipment operation, emission factors and transfer efficiencies from stack testing and daily emission calculations. Daily recordkeeping of operation and material usage is required to ensure compliance with these requirements. Because the sum of limited emissions at each stack results in allowable emissions of PM_{10} and $PM_{2.5}$ below 90 tons per year, and compliance verification with stack limits is conducted on a daily basis, it was deemed sufficient to demonstrate compliance with synthetic minor limits for PM_{10} and $PM_{2.5}$.

The permit requires the facility to show continuing compliance with PM_{10} and $PM_{2.5}$ NAAQS standards by establishing PM_{10} and $PM_{2.5}$ emission limits at every emission point based on the results of the dispersion modeling. In addition, each emission unit is required to vent to a specific emission point and to operate control equipment that is consistent with the assumptions made in the dispersion model. Demonstration of compliance with the emission limit at each emission point is based on a daily calculation of actual emission rates based on records of actual operating rates, known and approved emission factors or transfer efficiencies for each emission unit, and enforceable control equipment performance. The calculations for this compliance demonstration are defined in the permit for each emission point for which there are no limitations on the allowable hours of operation, and/or allowable process throughput is less than design capacity or the design capacity is not known, and/or the emission factor, transfer efficiency or control efficiency could change after testing is conducted to verify these parameters assumed for calculations. In addition, dispersion parameters assumed by the model, such as stack height, discharge direction, etc., are also enforced as permit conditions. Changes to these dispersion parameters trigger revisions to the modeling for NAAQs and the AERA analysis.

Some emission units, such as coining units modeled in compliance with applicable NAAQS and health benchmarks, using their calculated unrestricted potential to emit, but modeled assuming daily limited hours of operation. The permit includes restrictions of on these units to operate within the window of hours in each day that were assumed in the modeling. Since the facility did not propose any limitations on capacity, throughput, or emissions, the only compliance demonstration that is needed is records of the time of each day when these units are in operation of the is necessary for these units. Additionally, the permit does not have flexibility provisions for coining units.

Emission factors, transfer efficiencies and pollution control efficiencies are used to show the facility remains below Part 70 permitting thresholds, and to demonstrate compliance with emission limits at every emission point used in the model. Several of these parameters will be verified by performance testing required by the permit. Emission factors and transfer efficiencies will be updated by the most recent MPCA-approved performance test required by the permit. If revised emission factors or transfer efficiencies change and there has not been a modification at the facility that necessitates increase in emission limits, the permit requires the use of ARM requirements to update the emission factor or transfer efficiency used in compliance calculations without having to change the emission limit at each release point. If the facility wishes to make modifications to emission units that need increase in emissions limits, allowable process rates or required control efficiencies a major permit amendment will be required to revise these. Changes to emission limits trigger revisions to the modeling for pollutants for which a NAAQs analysis was conducted.

3.3.4. Lead limits

The permit contains state and federally enforceable limits on lead emissions such that the facility remains below the lead NAAQS standard and lead ingestion health benchmark. The emission limit to remain in compliance with the lead NAAQS standard is established at each emission point as pounds per day 92-day rolling average. The emission limit to remain in compliance with the lead ingestion health benchmark is established at each emission point as pounds per year 365-day rolling sum.

The facility will show compliance with lead NAAQS and to remain below the lead ingestion health benchmark by establishing emission limits at every emission point based on the results of the dispersion modeling and AERA. With few exceptions, both separate daily calculation of compliance with the lead NAAQS and the lead ingestion emission limits are required. In addition to transparency, this is required because if the emissions calculations show there is non-compliance with one set of limits, the compliance status for the other set of limits can be readily verified and the facility would be able to promptly address the situation based on the specific averaging times of each set of limits. In addition, each emission unit is required to vent to a specific emission point and to operate control equipment consistent with the assumptions made in the dispersion model. Compliance demonstrations with the lead emission limits is based on daily calculations of actual emission rates based on daily operating records for every lead emission unit using known emission factors and required pollution control efficiencies. The calculation for these demonstrations is defined in the permit for each emission point for which there are no limitations on the allowable hours of operation, and/or allowable process throughput is less than design capacity or the design capacity is not known, and/or the emission factor or control efficiency could change after testing is conducted to verify these parameters assumed for calculations. The die casting units have an annual cap on lead processing rates and lead emissions to show compliance with the lead ingestion health benchmark. A separate calculation for compliance with 365-day rolling sum limits is required for all the die casting units at COMG 16. Changes to dispersion parameters trigger revisions to the modeling for NAAQS and the AERA analysis.

Selected emission factors and pollution control efficiencies used to determine potential to emit parameters used in the dispersion modeling and AERA will be verified by performance tests required by the permit. Emission factors may be revised based on the results of the most-recent performance test

required by the permit. In order to revise emission factors based on stack test results, the permit requires the use of ARM requirements. If revised emission factors result in the need to increase emissions limits, further restrict allowable process rates or change required control efficiencies, a major permit amendment will be required to revise enforceable emission factors and may include a revised dispersion model in order to determine revised (lowered) process throughput and emission limits.

3.3.5. Nitrogen dioxide (NO_2) limits

The dispersion model showed compliance with one-hour NO_2 NAAQS when using emissions derived from heating and air conditioning units with a total allowable heat input of 10.69 MMBtu/hr and 2.29 MMBtu/hr at the North Building (STRU 38) and South Building (STRU 42), respectively. In order to comply with the NAAQS, the permit contains a federally-enforceable limit on total non-engine combustion capacity at each building and defined months of the year when they can be operated. The Permittee is required to keep an up-to-date inventory, including individual and total capacity, of all non-engine combustion units and is required to show that the total capacity remains below the permit limit, including recordkeeping of when the units are being operated. Changes emission limits trigger revisions to the modeling for pollutants for which a NAAQs analysis was conducted.

3.3.6. Coating room permanent total enclosures

Enforcement investigations prior to the Agreement revealed that the facility emitted HAPs (TCE) greater than major source thresholds since 2002 and, therefore, was subject to the requirements of 40 CFR pt. 63, subp. MMMM - National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products. As a result of the Agreement, permit conditions were incorporated into this permit action such that HAP-containing materials are not permitted to be used at the facility; therefore, 40 CFR pt. 63, subp. MMMM no longer applies. However, Permit No. 12300341-003 did not contain all the necessary enforceable permit conditions to ensure coating operations were operated and maintained in permanent total enclosures as per current accepted standards for proper operation. As a result, the methods required to maintain coating rooms as permanent total enclosures required under Subpart MMMM were adapted into the permit. MPCA determined these are appropriate and adequate methods to ensure all solvent vapors (VOCs) from coating operations, including t-DCE, are captured inside the coating room and vented to the common stack (STRU 73). The permit conditions require continuous monitoring of coating room pressure differential, including audible and visual alarms that alert when coating room pressure is above the pressure drop limit established by Method 204 of Appendix M to 40 CFR Part 51. The permit also requires inspection and maintenance of pressure drop monitoring devices, daily inspection of enclosure integrity, and annual testing of the enclosure to ensure it meets the definition described above following EPA Method 204 in Appendix M of 40 CFR Part 51.

During remediation investigations required by the Agreement, solvent vapor intrusion into sub-slab vapor space was detected, further indicating that the coating rooms were not being maintained as total enclosures. Subsequently, in addition to the mitigation system described in Section 3.2.2, the Order required that the facility install and maintain a permanent, impenetrable barrier on the concrete floors of each coating room such that no solvent vapors penetrate and further contaminate the sub-slab vapor space. The permit requires inspections of the floor coating (Retro Coat) for degradation each operating day, including maintenance, reporting, and shut-down requirements if degradation is observed.

Some coaters at the facility operate outside of a coating room. These coaters use water-based or UV coating (very low VOC). The unrestricted potential emissions were modeled from these units and the results demonstrated compliance with the applicable NAAQS and health benchmarks. Therefore, the permit authorizes operation of these units outside of a coating room (total enclosure) and under the modeled conditions.

3.3.7. Solvent vapor remediation system emissions

The permit requires sampling of the remediation system as required by the MPCA Remediation Division prior to the first (lead) canister, between the two canisters in-series, and after the second (lag) canister to detect emissions and verify GAC media quality. Based on manufacturer's operation recommendations, the permit requires GAC canister replacement after 300 days of continuous operation or sooner if recommended by the manufacturer. There is a sunset provision for this requirement in the permit that will become effective when the MPCA Remediation Division approves the removal of the GAC canisters for emissions control from the remediation stack. The uncontrolled emissions from the remediation stack have been characterized as part of the AERA analysis to ensure protection of human health in the event of cessation from GAC canister operation.

3.3.8. Verification of process records as primary compliance demonstration method for t-DCE emission limits.

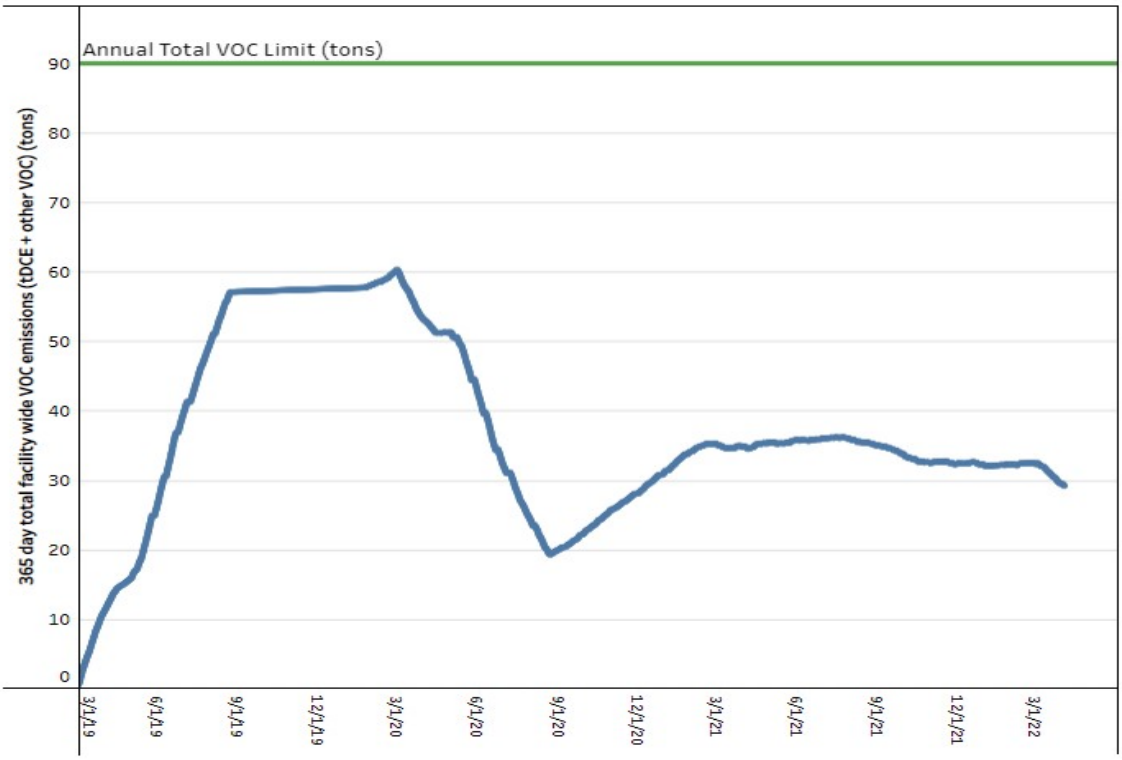
The MPCA deemed it prudent and necessary to have a primary method of compliance demonstration which should be evaluated for reliability in more than one way. As described in Section 3.3.2 above, the permit requires the facility to track usage and handling of t-DCE-containing materials by manual weighing t-DCE-containing materials on a daily basis. This is the primary compliance demonstration method.

During 2021 and the first quarter of 2022, Water Gremlin operated at t-DCE emission rates very close to the t-DCE emission limits established in the permit to protect human health based on the Minnesota Department of Health's Risk Assessment Advice (see Figure 1). The existing ambient monitoring network measurements confirm that the coating operation impacts for the last quarter of 2021 and first quarter of 2022 expressed as 365-day rolling average are near the maximum ambient concentration deemed to be protective of human health (see Figure 2), even after taking into account that coating lines did not operate between August 24, 2019 and January 22, 2020.

Water Gremlin has not made any specific commitments to accept enforceable conditions that will further reduce emissions to levels below the permit t-DCE emission limit during the life of the permit. Therefore, the margin between the permit limit and the Permittee's anticipated operations is small, meaning that small deviations from the permit conditions have the potential to result in emissions exceedances over the permit limit and, therefore, the compliance verification process needs to be as frequent as possible. To that end, the form of the emission limit is an annual limit based on a 365-day rolling sum. Daily recordkeeping to show compliance is required by the permit and this will make exceedances less likely because the Permittee will evaluate its usage and take corrective actions on a daily basis.

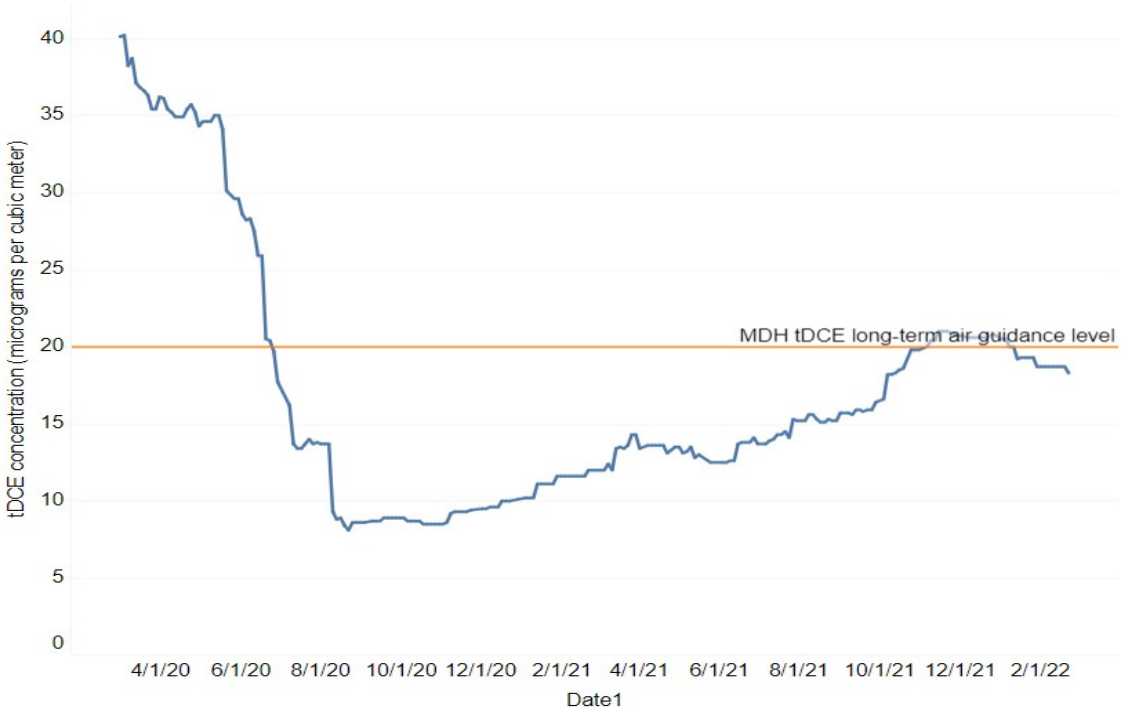
To verify that the daily manual tracking and recordkeeping is accurate and reliable, the permit includes two types of evaluations or audits of the primary compliance demonstration methods. The first audit method is the operation on a CEMS at the coater stack (STRU 73) along with the use of a correlation of solvent usage versus CEMS readings at the stack. The second method is a usage audit based on t-DCE containing material purchasing records and t-DCE containing material inventory at hand.

Figure 1. Cumulative annual VOC emissions, including t-DCE emissions*



* Coating lines did not operate between August 24, 2019 and January 22, 2020, by MPCA administrative order. Data is included in Attachment 6.

Figure 2. Highest 365-day rolling average concentrations of t-DCE monitored around Water Gremlin*



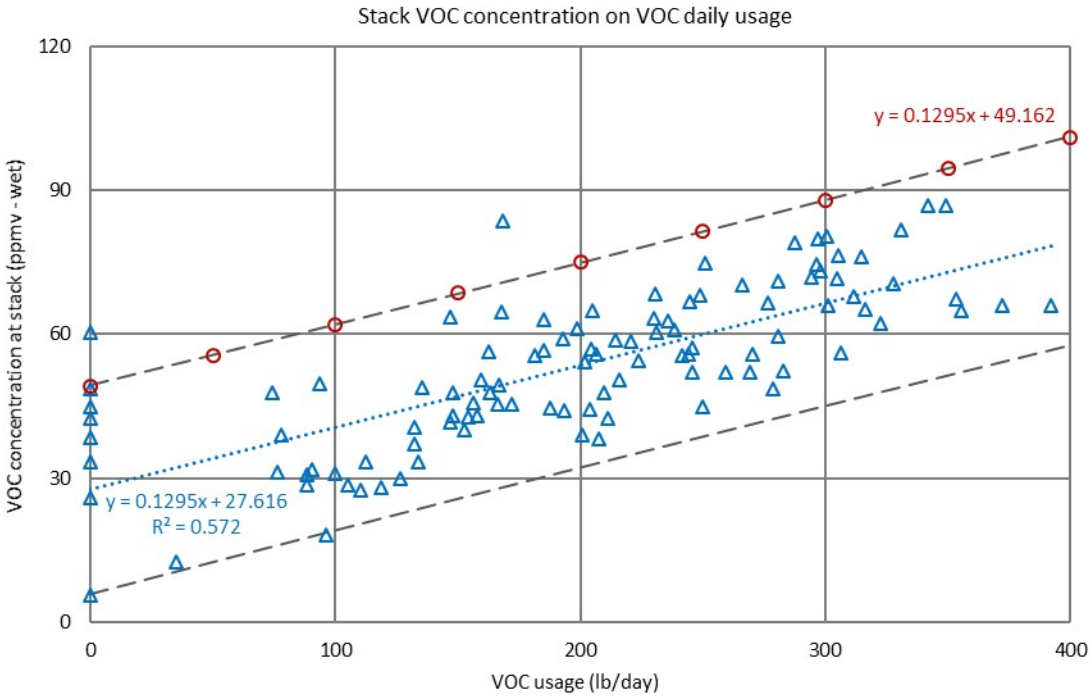
*Data is included in Attachment 6

Correlation of solvent usage versus CEMS readings at the stack

The permit requires the facility to install, operate, and maintain a CEMS that records actual VOC emission concentrations at the stack, as ppmv-wet Total Hydrocarbon Concentration (THC) as t-DCE. CEMS for VOCs are instruments that automatically and continuously measure concentrations of VOCs in air streams. In cases where there are more than one VOC compound present in the gases, the CEMS do not directly measure any specific VOC based its specific chemical composition. In the case of Water Gremlin, there are more than one VOC compound in the flue gases from coating operations, but the largest proportion is t-DCE. The use of CEMS in this case is considered a screening method to estimate VOC emissions because the results are a very good indicator of an emissions trend as it should follow the same trend as the records of solvent usage within an acceptable range. The permit requires the facility to keep electronic records of CEMS data and to submit monthly reports of measurements and conducted audits. Each day of coating operations, the CEMS results will be compared to an established correlation with t-DCE/VOC usage as a quality control indicator of t-DCE/VOC records. If the CEM results do not fall within the correlation envelope, it will trigger an audit of the recordkeeping process to be conducted by Water Gremlin. Any daily analysis where the CEMS readings fall outside this acceptable range will be reported to the MPCA along with the results of the audit.

The acceptable range between t-DCE/VOC usage records and CEMS results required by the permit was established by finding a linear trend between the emission values measured by the CEMS reading at the coating room stack (STRU 73) and the expected emission values calculated from daily t-DCE VOC usage based on daily usage of t-DCE containing coatings (daily usage value). The latter is required for compliance with the permit. For any of the 107 daily t-DCE/VOC usage values recorded from January 30, 2020 through June 3, 2020, the associated CEMS reading value (as ppmv-wet of THC as trans-1,2-Dichloroethylene) fluctuates around the trend line; that is, theoretically, there is a 50 percent chance for CEMS value to be above the trend and 50 percent chance to be below it (see Figure 3). Attachment 7 “Correlation of Solvent Usage Versus CEMS Readings at the Stack” includes the complete analysis of this data set.

Figure 3. Scatter plot of t-DCE usage versus CEMS data and regression curves



While the trend line, expressed mathematically as y = 0.1295x + 27.616 where "x" equals daily VOC from t-DCE coatings usage and "y" equals the daily CEMS reading, reflects the central tendency of data association, it is the two dotted lines nearly parallel to the trend line that shows the spread of the data. For a given "x", there is a 95 percent chance of seeing a "y" value inside the area between the two dotted lines, known as the 95 percent confidence interval. Because the curve for the upper end of the 95 percent confidence interval is generated through a number of steps (regression analysis), we found an approximate equation for the curve, expressed as y = 0.1295 x + 49.162, we call it the upper bound equation. A complete description of the observed data for this situation includes both the trend and the data spread. See the Table 6 below, Attachment 7 and Figure 3 above.

In order to demonstrate proper accounting of t-DCE/VOC (mostly t-DCE emissions) through daily usage records, the Permittee is required to calculate "x", which is daily t-DCE/VOC usage from t-DCE coatings, used each day and use that value to calculate the corresponding "y" value in the upper end of the 95 percent confidence interval (predicted CEMS reading). The Permittee can then see whether or not the actual CEMS reading for the day exceeds the upper end value calculated as described in the permit. If the actual CEMS reading for that day is greater than the CEMS reading predicted by the upper bound equation, this indicates that actual *VOC* usage is greater than what is being recorded. If this is the case, the Permittee must immediately audit VOC solvent usage records to determine the cause of the discrepancy, implement the needed corrections and report it as a deviation. In addition, the permit requires the submittal of a monthly VOC usage and CEMS results report that must include the results of any audit conducted as a result of this CEMS verification requirement.

Table 6. Linear regression data derived from actual t-DCE usage and CEMS data (1/13/2020 to 6/6/2020)

x (lb/day)	0	50	100	150	200	250	300	350	400
UPL (ppmv – wet)	49.41	55.69	62.04	68.43	74.88	81.38	87.94	94.56	101.22
Upper Bound Equation	49.16	55.64	62.11	68.59	75.06	81.54	88.01	94.49	100.96
% Relative Difference	-0.50	-0.10	0.12	0.23	0.24	0.19	0.08	-0.07	-0.26

Quarterly VOC solvent purchase and inventory audits and audit reporting

Each calendar quarter, the Permittee is required to audit purchase records and existing inventory of t-DCE-containing material, and t-DCE -containing material usage records, and keep records of each audit. The Permittee is required to submit the results of the quarterly audits with the annual report by the 31st of January. The Permittee is required to review and correct as needed the tracking of t-DCE containing materials if the audit shows significant discrepancies. The permit requires the submittal of a monthly VOC usage that must include the results of any audit conducted as a result of this quarterly VOC solvent purchase and inventory audit.

3.3.9. Emission units without compliance demonstrations

The combustion sources modeled in compliance with applicable NAAQS and health benchmarks, using their calculated unrestricted potential to emit, which were listed as emission rates at the STRU level. The permit does not have flexibility provisions for the combustion units associated with EQUI 101, EQUI 102, EQUI 103, EQUI 104, units in COMG 6 and EQUI 222 (Natural Gas Bake Oven). Since the facility did not propose any limitations on capacity, and only natural gas can be used by design, no compliance demonstration is necessary for these units as these cannot physically run at a higher rate.

3.4 Performance testing

The facility made several informed assumptions in limited potential to emit calculations and dispersion characteristics requirements to determine and/or verify emission factors and emission rates to demonstrate compliance with applicable VOC, t-DCE, PM_{10}/$PM_{2.5}$, and lead emission limits. The permit requires verification of emission factors for several emission units as well as testing for compliance with emission

limits. Appendix E to the permit contains the minimum recordkeeping that must be done during each stack test to verify emission factors and other compliance demonstrations. Appendix E also lists and the references EPA Stack Test Methods for each pollutant. The MPCA may deviate from this list in compliance with Minn. R. 7017.2020. Emission factors, transfer efficiencies stack flow rates and other compliance demonstration parameters may be re-set based on approves stack testing results based on ARM permit conditions described at above.

3.4.1. Battery terminal post coaters

The permit requires operation and maintenance of VOC/t-DCE CEMS and daily validation of results as described in Section 3.3.8. The CEMS has to be calibrated and maintained to ensure proper operation. In addition, the permit requires testing to measure PM_{10} and $PM_{2.5}$ emission rates from coaters that apply coating using spray application, including VOC, water-based, and UV coaters, within 180 days following the issuance of the permit and every 60 months thereafter using EPA Reference Methods 201A and 202 (or other methods as approved by MPCA through the submittal and approval of a test plan) for PM_{10} and $PM_{2.5}$. The purpose of the test is to verify emission factors and pollution control efficiency and demonstrate compliance with PM_{10} and $PM_{2.5}$ emission limits enforced by the permit at STRU 73.

3.4.2. Lead processing units

In order to demonstrate the efficacy of emission factors used in PTE calculations, the permit requires recurring performance testing scheduled such that all Nederman filters and Smog Hogs are tested at least once every five (5) years using EPA Reference Methods 201A and 202 for PM_{10}/$PM_{2.5}$and Method 12 for lead. The purpose of the tests is to verify emission factors and pollution control efficiency, and demonstrate compliance with PM_{10}, $PM_{2.5}$, and lead emission limits enforced by the permit

3.4.3. Coating room permanent total enclosure

The facility conducted an AERA in order to determine compliance with applicable health benchmarks, specifically t-DCE. Since the facility has characterized the main source of t-DCE emissions as being emitted from STRU 73, the permit requires the facility maintain all battery terminal post coaters using t-DCE in rooms that are permanent total enclosures meeting the criteria of Method 204 in Appendix M of 40 CFR Part 51. The facility conducted a performance test on September 25 and October 3, 2019, in which compliance with the pressure drop limit described under Method 204 in Appendix M of 40 CFR Part 51 and the permanent total enclosure criteria of EPA Method 204 in Appendix M of 40 CFR Part 51 was demonstrated. The MPCA concluded the pressure drop limit required by 40 CFR pt. 63, subp. MMMM was an appropriate and necessary operating standard to ensure the coating room operates as a total enclosure. This minimum pressure drop of less than or equal to -0.007 inches of water and other operational requirements are enforced by the permit as appropriate and necessary conditions under Minn. R. 7007.0800. With this operation requirement in the coating rooms, the AERA is approved to assume all coating emissions in the coating rooms connected to STRU 73 do indeed vent to STRU 73. The permit requires recurring performance testing on an annual basis for all coating rooms in COMG 5 to ensure the permanent total enclosure is being operated and maintained according to the permit.

3.5 NAAQS dispersion modeling

The facility was required to complete dispersion modeling per the MPCA's current dispersion modeling practices to show modeled compliance with NAAQS for criteria pollutants, including the 24-hour PM_{10}, annual and 24-hour $PM_{2.5}$, annual and 1-hour NO_2, and 3-month lead standards specified under 40 CFR pt. 50. The results of the dispersion modeling are shown in Table 7. Operating restrictions and dispersion parameters were assumed when the modeling was conducted, so these have been incorporated as emission limits and operation requirements. Compliance with these operating restrictions and dispersion characteristics is effective on the date of permit issuance (e.g., coating usage, lead throughput, operation of control equipment at the assumed control efficiencies, increased stack height, stack direction, flue gas exit velocity, etc.). In addition, per MPCA practice, a table of the modeled parameters has been added to the

permit as Appendix C. Other than the specific operating restrictions mentioned above, the parameters listed in Appendix C of the permit describe the operation of the facility at maximum capacity. In other words, the parameters listed in Appendix C represent the minimum dispersion parameters at the maximum emission rates allowed by this permit. Compliance with the operation restrictions and dispersion characteristic requirements ensure compliance with the worst-case conditions of air emissions allowed by this permit. The purpose of listing the parameters in the permit appendix is to provide a benchmark for determining if and when additional modeling is required.

Table 7. NAAQS/MAAQS modeling results

Pollutant	Averaging Period	NAAQS standard ($\mu g/m^3$)	MAAQS standard ($\mu g/m^3$)	Total modeled concentration (includes background and nearby sources ($\mu g/m^3$)	Percent of standard (%)	
					NAAQS	MAAQS
Lead	Rolling 3 mo. Avg	0.15	0.15	0.13	84.31	84.31
NO_2	1-hr	188.0	188.0	149.83	79.70	79.70
	Annual	99.7	99.7	22.66	22.66	22.66
PM_{10}	24-hr	150.0	150.0	66.78	44.52	44.52
$PM_{2.5}$	24-hr	35.0	35.0	33.81	96.60	96.60
	Annual	12.0	12.0	11.39	94.94	94.94

3.5.1. Equivalent or Better Dispersion (EBD) modeling and computer dispersion modeling triggers for NAAQS

Appendix C contains the benchmark parameters for determining if additional EBD or computer dispersion remodeling is required. The permit contains EBD modeling conditions that trigger when modifications cause a change to dispersion parameters or emission rates used in the previous model. If the modification does not demonstrate equivalent or better dispersion, the facility must conduct computer dispersion remodeling under the constraints of the proposed modification. The permit requires EBD or remodeling even for changes that do not require a permit amendment because continued compliance must be demonstrated regardless of requirements to submit permit applications or notifications. Additionally, in the case of modeling for PM_{10} and $PM_{2.5}$, NOx, and Lead, the emission limits at the stacks are much lower than the respective insignificant permit modification thresholds at Minn, R 7997.1250. Additionally, modeling shows a compliance margin of less than 10 percent for $PM_{2.5}$. Therefore, the verification of compliance with NAAQS may not be contingent to the triggering of a permit amendment requirement because this would not ensure continued modeled compliance with NAAQAs.

3.6 Air Emissions Risk Assessment (AERA)

The facility air emissions were characterized by an AERA to determine if emissions of any air toxics with known health benchmarks from the facility sources were predicted to cause ambient concentrations of air toxics above any known health benchmarks. Changes to dispersion parameters, emission rates of modeled air toxics, revision of health benchmarks to more stringent values for modeled air toxics or the introduction of new chemicals with known health benchmarks trigger revisions to the modeling for AERA analysis.

The active ingredient in the VOC solvent (t-DCE) was investigated to determine the emission limit in which the ambient air concentration of t-DCE due to emissions from the facility would remain below health benchmarks. The MDH developed chronic Risk Assessment Advice (RAA) in 2020 specifically for t-DCE air permitting applications at the Water Gremlin facility (Attachment 8). The MDH established the chronic

health benchmark of 20 micrograms per cubic meter (µg/m3) and the sub-chronic health benchmark of 200 micrograms per cubic meter (µg/m3). The chronic RAA is the most protective and it was used to derive the t-DCE annual emission limit to be enforced in the air permit. The chronic health benchmark was used to derive the t-DCE annual emission limit in consideration to the extended prior unpermitted exposures of this community. Because the chronic health benchmark is the most protective, compliance with the chronic health benchmark will ensure compliance with the MDH's sub-chronic health benchmark. On April 22, 2022, Water Gremlin submitted, as part of the comments on the Preliminary Draft Permit No. 12300341-101, a Technical Memorandum on the toxicity value for inhalation for t-DCE. In this Technical Memorandum, Water Gremlin proposed revised chronic and sub-chronic inhalation health benchmarks that are twice as large as those advised by the MDH. The MPCA and the MDH reviewed the April 2022 Water Gremlin's Technical Memorandum and supporting information and concluded it was not appropriate nor sufficient to revise the MDH's 2020 RAA. Attachment 9 documents the MDH's review of the Water Gremlin's Technical Memorandum on the toxicity value for inhalation for t-DCE dated April 22, 2022. The MPCA agrees with MDH's assessment and is therefore t using the chronic health benchmark of 20 micrograms per cubic meter (µg/m3) and the sub-chronic health benchmark of 200 micrograms per cubic meter (µg/m3) to establish the permit t-DCE emission limit for in support of the Water Gremlin draft Permit No. 12300341-101.

Air impacts from t-DCE were analyzed through an AERA, by reviewing the actual measured t-DCE concentrations in ambient air around the facility and by also reviewing the corresponding facility operation records taken during the period of observations (see Attachment 6). Details of the AERA analysis are included in Attachment 1 and 1a. Given the availability of site-specific ambient air monitoring and t-DCE usage data, a weight of evidence approach was used to show that the facility can emit no more than 32.6 tons per year of t-DCE in order to remain below the MDH's health benchmark. This value is lower than the proposed limit that considered the AERA results alone. The analysis conducted to establish a limit of 32.6 tons per year of t-DCE is described in detail in Section 3.6.2. Therefore, the permit contains an enforceable permit limit such that t-DCE emissions remain below 32.6 tons per year 365-day rolling sum of all t-DCE emissions, both inside and outside coating rooms. A revised AERA and review of ambient monitoring data and solvent usage will be necessary if the facility requests a change in the VOC solvent formulation through a major amendment as required by the permit.

Additional emissions were characterized by the AERA, including the emissions from the new UV coating operations, water-based coating, paired sub-slab and indoor air testing, and emissions from the controlled and uncontrolled air releases from the remediation system, to determine if emissions of any air toxics from these sources were above any known health benchmarks. UV coating operations result in emissions of the following chemicals or chemical types: Isobornyl Acrylate, 4-hydroxybutyl acrylate, 2-Benzyl-2-dimethlyamino-1-(4-morpholino-phenyl)-1-butanone, Rheological Additive, Visible photoinitiator, Photoinitiator, and Acrylated Resin. The MPCA does not have a health benchmark for any of these chemicals (those with known names and CAS#s) from any of the information sources used to obtain health benchmark information, including MDH, EPA, Cal EPA, and ATSDR. Since Michigan EGLE developed a health benchmark for isobornyl acrylate, a screening assessment was completed for this compound. The annual modeled concentration of isobornyl acrylate was approximately two micrograms per cubic meter, and the Michigan EGLE health benchmark was 14 micrograms per cubic meter annual average. Therefore, the concentration of this isobornyl acrylate that will be used at this facility was below a level at which further permit limits or further analysis would be recommended.

The water-based coating operation, and any other VOCs related to coating, were tested for significance with respect to health benchmarks in a screening risk assessment spreadsheet (RASS) based on either indoor air testing or laboratory analysis data. When these pollutants were measured below detection level concentrations, the detection level concentration was used to estimate emission rates. Any emission rate that resulted in an air concentration less than 10 percent of an inhalation health benchmark was excluded from further analysis and permit limit consideration.

In addition to showing compliance with lead NAAQS, lead was also investigated to determine if emission limits would be necessary to keep lead emissions below the 0.15 micrograms per cubic meter ingestion health benchmark. The AERA modeled maximum hourly and annual emission rates from each lead processing unit that would ensure the facility would remain below the lead health benchmark. These emission rates from each lead emission point are in the permit as state (health benchmark) enforceable or federally-enforceable (lead NAAQS) limits, including emissions calculations and recordkeeping.

3.6.1. Computer dispersion modeling triggers for AERA

Appendix C contains the benchmark parameters for determining if additional computer dispersion remodeling is required. The permit contains conditions that trigger when modifications cause a change to dispersion parameters or emission rates used in the previous modeling and AERA. If the modification triggers AERA updates, the facility must conduct computer dispersion remodeling and air toxics analysis under the constraints of the proposed modification. The permit requires remodeling and revised RASS/AERA even for changes that do not require a permit amendment because continued compliance must be demonstrated regardless of requirements to submit permit applications or notifications. In the case of modeling for lead, the emission limits at the stacks are much lower than the respective insignificant permit modification thresholds at Minn, R 7007.1250. In the case of t-DCE and other evaluated air toxics, the actual operation is expected to be very close the t-DCE emission limits. Therefore, the verification of compliance with modeling and AERA parameters for any of the chemicals of concern cannot be contingent to the triggering of a permit amendment requirement because this would not necessarily ensure continued compliance with health benchmarks.

3.6.2. Justification for MPCA Revision to Water Gremlin's Proposed t-DCE Emission Limits

An Air Emissions Risk Analysis (AERA) is an iterative process, where emissions are incorporated into an air dispersion model to estimate air concentrations around the facility. The air concentrations are then compared to health benchmarks to estimate cancer risks and hazard indices. Water Gremlin submitted with the final air permit application a final Risk Assessment Spreadsheet (RASS) with a STRU 73 emission rate of 76 tons per year, and a total facility emission rate of 77.23 tons per year. Water Gremlin modified the 1,2-(*trans*)-dichlorotheylene (t-DCE) risk characterization in the MPCA RASS from MPCA's webpage by deleting the MDH Risk Assessment Advice of 20 ug/m^3 and replacing that value with a Provisional Peer Reviewed Toxicity Value (PPRTV) from EPA's Superfund Program of 40 ug/m^3. This resulted in a total hazard index of 1.18 for the full facility. The MPCA and MDH have agreed upon and implemented a hierarchy for toxicity value information sources for over a decade. MDH toxicity values are first in the hierarchy and PPRTV values are fourth in this hierarchy. Therefore, MPCA would apply a value from the MDH before looking for a value from the EPA Superfund Program. Using the MDH value of 20 ug/m3, the total facility hazard index would be 2.36.

Since a total hazard index represents the summed potential impacts from all pollutants, MPCA AERA guidance allows facilities to refine their hazard index summations into groups that reflect individual human health endpoints (e.g., respiratory, neurological, etc.). The MDH health benchmark for t-DCE was based on the sensitive health endpoint of immunological changes which is categorized in the 'blood/hematological' endpoint in the RASS. At the proposed emission rates from Water Gremlin, the endpoint-refined hazard index was 1.98. Initially Water Gremlin, for early modeling purposes, rounded down previous submittals of endpoint-refined hazard index to one significant figure and they were using the pre-agreed upon toxicity value hierarchy. From the MPCA's perspective, there was sufficient data on actual ambient monitoring measurements of t-DCE around Water Gremlin, concurrent daily t-DCE solvent use reports, and, therefore regardless of the RASS results in the final iteration, any actual facility-impacted concentrations measured from the ambient monitoring around Water Gremlin and reported actual t-DCE usage rates would be considered and reconciled for the final decision on the

permit emission limit for t-DCE. The current result in the Water Gremlin RASS rounds to 2, and therefore requires further refinement.

Notably, Water Gremlin was operating right near the intended t-DCE limit, and actual ambient monitoring results showed that the modeling was under-predicting air concentrations, MPCA determined that rounding of the endpoint-refined hazard index was not sufficiently protective in this situation. Furthermore, Water Gremlin modified the MPCA RASS to include a toxicity value outside of the MPCA hierarchy, and therefore MPCA has developed a corrected RASS that follows MPCA guidance based on all other data provided by Water Gremlin. MPCA determined the emission rate of t-DCE in an un-modified MPCA RASS so that the final endpoint-refined hazard index was 1.00. These MPCA's corrected RASS t-DCE emission rates were 37.5 tons per year at STRU 73 and 38.7 for the total facility. MPCA's corrected RASS is included in Attachment 1.a.

However, after the MPCA analyzed Water Gremlin's actual ambient air monitoring results for t-DCE and the corresponding t-DCE usage records, the MPCA compared these to the predictions from the MPCA's corrected RASS. It was based on this comparison that the MPCA concluded the air dispersion modeling and corrected MPCA RASS for t-DCE was under-predicting actual impacts on ambient air concentrations of t-DCE. Therefore, MPCA determined that consideration of the reported daily t-DCE solvent use and ambient air measurements of t-DCE needed to be included in setting the t-DCE limit. The MPCA aligned the individual ambient air monitoring results with reported daily use of solvent from Water Gremlin. The ambient air measurements of t-DCE bracket 20.0 ug/m^3 (the MDH chronic health benchmark for t-DCE) at an annual use of 32.6 tons per year as shown below.

Site	Sample Date	Pollutant	Rolling Mean (ug/m3)	365 Day Rolling Total (tons)
W	10/25/2021	Trans-1,2-Dichloroethylene	19.81	32.57
W	10/28/2021	Trans-1,2-Dichloroethylene	19.82	32.52
W	10/31/2021	Trans-1,2-Dichloroethylene	19.82	32.50
W	11/3/2021	Trans-1,2-Dichloroethylene	19.87	32.60
W	**11/6/2021**	**Trans-1,2-Dichloroethylene**	**19.98**	**32.59**
W	**11/9/2021**	**Trans-1,2-Dichloroethylene**	**20.42**	**32.64**
W	11/12/2021	Trans-1,2-Dichloroethylene	20.42	32.60
W	11/18/2021	Trans-1,2-Dichloroethylene	20.98	32.60
W	11/21/2021	Trans-1,2-Dichloroethylene	20.98	32.44
W	11/30/2021	Trans-1,2-Dichloroethylene	20.71	32.42
W	12/3/2021	Trans-1,2-Dichloroethylene	20.71	32.40
W	12/6/2021	Trans-1,2-Dichloroethylene	20.62	32.42
W	12/9/2021	Trans-1,2-Dichloroethylene	20.62	32.39
W	12/12/2021	Trans-1,2-Dichloroethylene	20.62	32.45
W	12/15/2021	Trans-1,2-Dichloroethylene	20.60	32.56
W	12/18/2021	Trans-1,2-Dichloroethylene	20.60	32.55
W	12/21/2021	Trans-1,2-Dichloroethylene	20.59	32.48
W	12/27/2021	Trans-1,2-Dichloroethylene	20.84	32.27
W	12/29/2021	Trans-1,2-Dichloroethylene	20.72	32.21

Therefore, after considering all the evidence, not just modeling and the MPCA corrected RASS, the MPCA staff recommend that Water Gremlin be limited at a total facility level at 32.6 tons per year to protect public health and ensure the facility did not exceed the health benchmark limit of 20.0 ug/m^3. Although 32.6 tons per year is approximately 16 percent lower than the modeled result, it is appropriate

based on the weight of the evidence provided by actual ambient air measured concentrations of t-DCE around the facility and the associated t-DCE usage at the facility. It must be noted there are no other known sources of t-DCE around the Water Gremlin facility other than Water Gremlin itself.

The MPCA has followed a weight of evidence approach in this risk management decision pertaining to monitoring and the recommended permit limit of at 32.6 tons per year, as follows:

1) Ambient measurements (t-DCE) are close to the MDH RAA - At the current t-DCE use rate of between 29 and 35 tons annually, 365-day rolling average ambient measurements at the Water Gremlin facility are at or exceeding the MDH chronic health benchmark of 20 µg/m3. (*https://www.pca.state.mn.us/air/water-gremlin-air-monitoring*)

2) Other on-site sources of t-DCE - The charts on the Water Gremlin air monitoring webpage represent only the t-DCE use in coating rooms, and do not reflect other *t*-DCE air emissions that are emitted at the site (evaporation loses to indoor air outside the coating rooms, remediation stack). These other onsite air emissions encompass about 1-1.5 tons per year of t-DCE. The calculations of t-DCE use in coating rooms do not take into account the t-DCE that is present in waste leaving the facility, this information has not been provided with the permit application.

3) Multiple sources of information - The facility is operating near the proposed total facility permit limit. The current air dispersion modeling efforts for the t-DCE recommended limit, and near their current use, are under-to-accurately predicting the ambient air measurements at the fence line.

4) Chronic (long term) RAA matches planned facility operation - The MDH defines a chronic (long term) exposure as over 8 years or over approximately 10 percent of a person's lifetime. MPCA is using the chronic inhalation health benchmark since the permit will be issued for Water Gremlin to operate into the future.
(*https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/tdecinfo.pdf*)
(*https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/airdurations.pdf*)

5) Community concerns - MPCA has received many community requests that MPCA consider past potential trichloroethylene (TCE) exposures in analyses that inform the permit. MPCA has no direct way to account for potential past exposures of TCE in current AERA practices. Therefore, it is prudent that we apply the most health-protective exposure duration (chronic), particularly since the MDH Air Guidance Values for both TCE and t-DCE were developed based on the same sensitive health endpoint of impacts to the immune system.

6) Consistent MPCA practices - In May 2020, the Minnesota legislature passed a partial ban of trichloroethylene use by permitted sources. Part of the legislation requires that TCE replacements be less toxic to human health than TCE. The MDH RAA for t-DCE supports this work. The use of this RAA from MDH is also consistent with the MPCA AERA program, it is not a facility-specific value. (*https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/tdcesumm.pdf*)

3.7 Ambient air boundary

During the air dispersion modeling analysis, the Permittee omitted receptors on portions of the facility property. These portions of the atmosphere that may be accessible to the public within the facility property must be excluded from public access (ambient air). The Permittee maintains security fencing along the entire facility perimeter and a controlled access gate. This fence line defines the ambient air boundary used for siting receptors in the air dispersion modeling analysis. The MPCA has determined that the existing security fencing is sufficient to establish an ambient air boundary, based on guidance contained in the 1980

letter from the US Environmental Protection Agency (EPA) Administrator Douglas Costle to Senator Jennings Randolph and the March 28, 2017 MPCA Memorandum "Clarification of MPCA Working Practice to Evaluate the Federal Definition of Ambient Air in Air Quality Dispersion Modeling."" (Appendix D to MPCA Air Dispersion Modeling Practices Manual). This determination is also consistent with the US EPA December 2019 Draft "Revised Policy on Exclusions from 'Ambient Air'." This permit requires the Permittee to comply with a general public preclusion plan, which must be maintained onsite. The Permittee must document any security breaches, as well as identify any security deficiencies and update the Plan accordingly to prevent future breaches. Appendix G to the permit includes a map depicting the ambient air boundary.

3.8 Paired sub-slab and indoor air testing

The Administrative Order executed January 17, 2020, required the Facility conduct paired sub-slab and indoor air testing as a condition for re-starting VOC coating operations. This data will be compared against future test data to determine if VOCs are migrating through the concrete floor. Indoor air samples obtained were tested for a variety of air toxics (EPA Method TO-15) and their respective concentrations reported, in micrograms per cubic meter ($\mu g/m^3$), based on method detection limits (MDLs). If concentrations of chemicals were detected above MDLs, their emission rates were calculated based upon the detected concentrations. For chemicals not detected based on the assumed MDL, emission rates for those chemicals were calculated using the MDL. These emissions were characterized in the AERA by assuming they are emitted through building ventilation systems based on the ventilation rate through the building vent associated with the room whose indoor air was tested.

3.9 Ambient air monitoring

The March 1, 2019, Stipulation Agreement required the facility to conduct ambient air monitoring to determine ambient concentrations VOCs (TO-15), including TCE and t-DCE, around the facility and adjacent properties in order to demonstrate emissions from the facility do not pose an unacceptable risk to human health. The facility prepared and submitted an Ambient Air Monitoring Plan in general accordance with United States Environmental Protection Agency (EPA), Air/Superfund National Technical Guidance Series, Volume IV – Guidance for Ambient Air Monitoring at Superfund Sites (Revised), EPA-451/R-93-007, 1993, and MPCA's Exhibit M.

3.9.1. Ambient monitoring pre-permit issuance

The ambient air monitoring plan required by the Stipulation Agreement was approved by the MPCA and operation of the monitoring network began March 1, 2019, including five (5) VOC operated by the facility. MPCA independently operated two (2) VOC and two (2) lead monitoring sites in response to community concerns about VOC exposure for vulnerable populations.

3.9.2. Ambient monitoring post-permit issuance

<u>VOC and t-DCE</u>

Continued ambient monitoring of VOC and t-DCE concentrations around the facility is required to by the permit demonstrate continuous compliance with the t-DCE health benchmark value. VOC (TO-15) ambient monitoring enables detection of deviations from the expected emissions profile from the facility. The permit requires the facility to monitor according to the Ambient Air Monitoring Plan implemented as a result of the 2019 Stipulation Agreement (Attachment 5).

The permit allows Water Gremlin to revise the VOC and t-DCE ambient monitoring plan in accordance with MPCA recommendations for acceptable reduction in ambient monitoring requirements. The MPCA's air monitoring staff recommendations for a revised t-DCE and VOC ambient monitoring plan are based on analysis of ambient monitoring data collected from March 1, 2019, to August 1, 2020, to determine if ambient monitoring requirements could be adjusted to align with standard MPCA practices. Based on the analysis, MPCA air monitoring staff recommends the following:

1) Maintain the two (2) monitors located at the West and North sites meeting the following EPA siting requirements:
    a. Permanent site
    b. Mass flow controller
    c. Install platforms
    d. Improve monitoring site security

Monitoring results consistently show the West and North monitoring sites measuring the highest t-DCE and TCE concentrations on average (Figures 4 and 5). These two sites provide a "worst-case scenario" of ambient air t-DCE and TCE concentrations surrounding the facility. Based on these results, t-DCE and TCE concentrations at the other sites are not expected higher on average than t-DCE and TCE concentrations measured at the West and North sites. Therefore, maintaining the West and North sites meeting EPA siting requirements and discontinuing the other VOC monitoring sites will continue to provide representative measurements on ambient t-DCE concentrations around the facility.

Figure 4: Average t-DCE concentrations at Water Gremlin monitoring sites 3/1/2019 to 8/1/2020

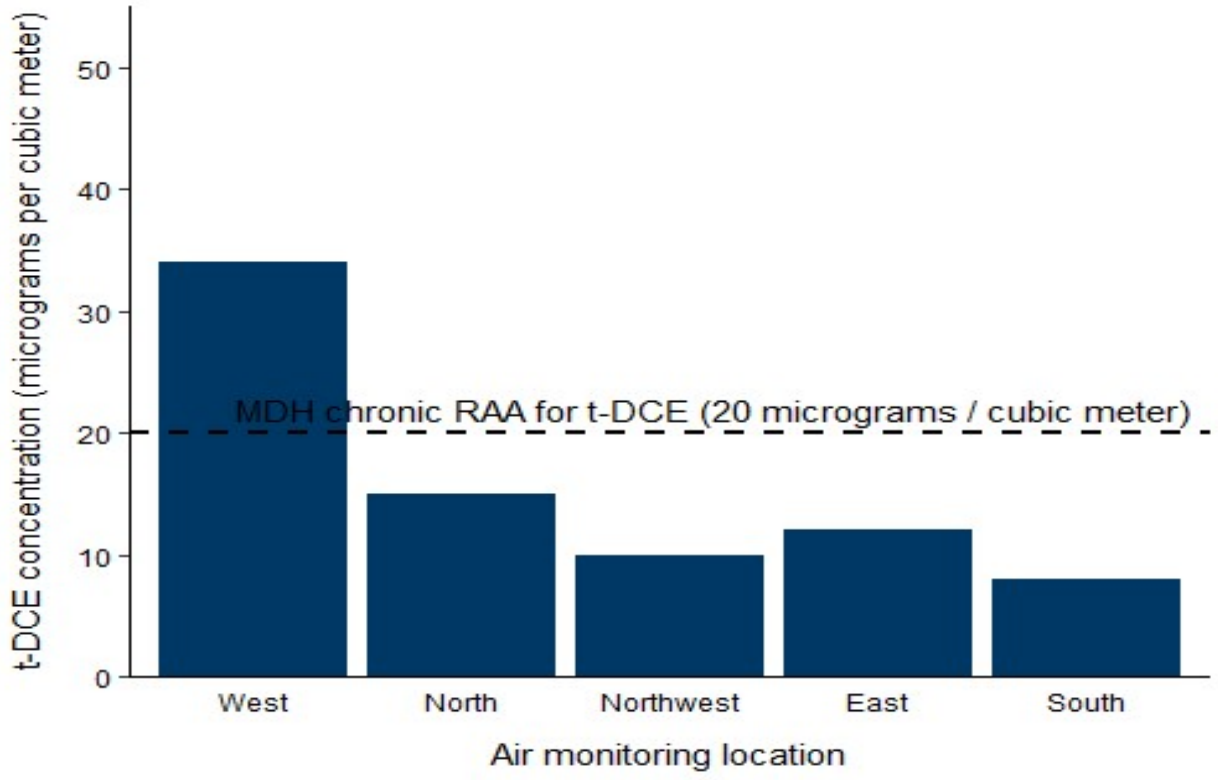
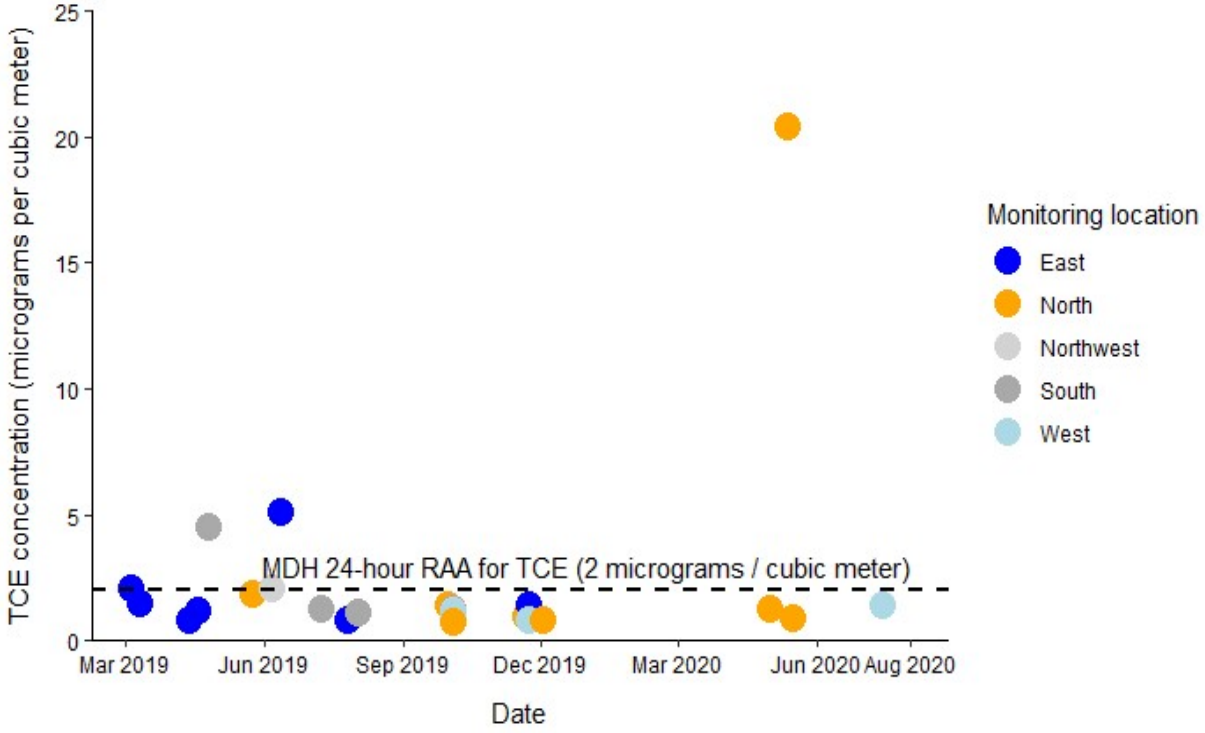


Figure 5: Detected TCE sample results at Water Gremlin air monitoring sites 3/1/2019 to 8/1/2020



2) Reduce sampling frequency from once every three (3) days to once every six (6) days when coating operations are occurring. Average ambient air concentrations measured around the facility during coating operations once every six days are about the same as average concentrations measured once every three days and the facility's t-DCE throughput (and emissions) do not vary greatly on a day-to-day basis. Therefore, reducing the sampling frequency from once every three days to once every six days would make the facility's sampling schedule consistent with MPCA's VOC air sampling schedule without compromising the representativeness of the measurements.

3) Submit all monthly TO-15 results to MPCA directly from the third-party laboratory within 30 days after the last day of the month. Since t-DCE is a pollutant with potential risks primarily associated with long-term exposure, it is generally not necessary to receive monitoring results within days. It is more important to focus on long-term average concentrations and trends instead of day-to-day monitoring results. Monthly results submissions would suffice for evaluating potential health risks associated with t-DCE exposure and notifying the community of any potential health risks in an appropriate amount of time. This would reduce the frequency which new information is reported to the public, but all monitoring results will still be made publicly available as needed.

4) MPCA Environmental Data Quality Unit may annually review and request amendments.
The facility shall include all of the information above, including monitoring locations, sampling frequency and duration, data submittal process, and a quality assurance project plan (QAPP) in their air monitoring plan. The monitoring plan is not valid until approved by the MPCA Environmental Data Quality Unit. Once the monitoring plan is approved, the facility is expected to operate an air monitoring network and submit results to MPCA in accordance with the monitoring plan. The monitoring plan may be reviewed annually by the MPCA Environmental Data Quality Unit and MPCA may request amendments to the air monitoring plan after review.

<u>Lead</u>
MPCA's ambient monitoring staff conducted an analysis of ambient air measurements during the period between September 18, 2019, and January 29, 2022, and concluded the MPCA operated lead monitoring

sites may be removed. The Agency further concluded the facility may demonstrate compliance with the lead NAAQS through either air dispersion modeling or ambient air monitoring described in the MPCA's industrial monitoring process. Once the facility demonstrated compliance with the lead NAAQS through either modeling or monitoring, the MPCA lead monitoring sites were deemed redundant and were discontinued. Accordingly, the permit does not require continuation of ambient monitoring for lead.

3.9.2. Discontinuation of VOC ambient air monitoring after permit issuance

In addition to the option for a revised ambient air monitoring plan with reduced requirements, MPCA staff also developed conditions in which the facility may discontinue ambient air monitoring around the facility. These conditions were developed based on EPA's Ambient Air Monitoring Network Assessment Guidance and MPCA's Development of an air quality monitor siting plan for determination of compliance best practices. The conditions for discontinuation of t-DCE and VOC ambient monitoring are included in the permit and will be implemented upon review and approval from MPCA. These recommendations include:

1) Two years of ambient air monitoring is conducted after an ambient air monitoring plan is approved by MPCA and implemented after the permit issuance date;
2) There are no violations of the permit or operations shut down within that year;
3) The facility's 1,2-(trans-) Dichloroethylene emissions are at least 80 percent of the permitted limit during the ambient air monitoring period; and
4) The probability of future long-term average 1,2-(trans-) Dichloroethylene concentrations being above health guidelines is less than 5 percent.

3.10 Flexibility to modify, replace, or add new battery terminal post coaters

The Permittee wants flexibility to convert VOC coaters to UV coating technology, and the Permittee has asked for flexibility to convert VOC coaters and install more water-based coaters without applying for a major amendment. MPCA supports flexibility for this purpose. Table 8 summarizes the flexibility provided by the permit that would allow and prohibit (without a major amendment) conversion or replacement of existing coaters, or addition of new coaters.

Table 8. Summary of flexibility allowed by the permit

Coating type and application method	YES to convert to OR replace with	NO to convert to OR add coaters	Comment
VOC dip/drip	• Water-based dip/drip • Water-based spray • UV spray	• Larger capacity VOCdip/drip • VOC spray	Modeling accounts for replacement and addition of new UV coaters or other new sources of PM/PM_{10}/$PM_{2.5}$ (i.e. water-based spray). Addition or increase in capacity for VOC coaters, or increase in PM/PM_{10}/$PM_{2.5}$ potential emissions, would need further permit evaluations.
VOC spray	• Water-based dip/drip • Water-based Spray • VOC dip/drip of equal of lower size • VOC spray of equal or lower size • UV spray	• Larger capacity VOC spray • Larger capacity dip/drip VOC	Modeling accounts for replacement and addition of new UV coaters or other new sources of PM/PM_{10}/$PM_{2.5}$ (i.e. water-based spray). Addition or increase in capacity for VOC coaters, or increase in PM/PM_{10}/$PM_{2.5}$ potential emissions, would need further permit evaluations.
Water-based dip/drip	• Water-based spray • Water-based dip/drip	• VOC dip/drip • VOC spray	Modeling accounts for replacement and addition of new UV coaters or other new

	• UV spray		sources of PM/PM_{10}/$PM_{2.5}$ (i.e. water-based spray). Addition or increase in capacity for VOC coaters, or increase in PM/PM_{10}/$PM_{2.5}$ potential emissions, would need further permit evaluations.
Water-based spray	• Water-based dip/drip • Water-based spray • UV spray	• VOC dip/drip • VOC spray	Modeling accounts for replacement and addition of new UV coaters or other new sources of PM/PM10/PM2.5 (i.e. water-based spray). Addition or increase in capacity for VOC coaters, or increase in PM/PM_{10}/$PM_{2.5}$ potential emissions, would need further permit evaluations.
UV spray	• Water-based dip/drip • Water-based spray • UV spray	• VOC dip/drip • VOC spray	Modeling accounts for replacement and addition of new UV coaters or other new sources of PM/PM_{10}/$PM_{2.5}$ (i.e. water-based spray). Addition or increase in capacity for VOC coaters, or increase in PM/PM_{10}/$PM_{2.5}$ potential emissions, would need further permit evaluations.

Appendix B to the permit contains an inventory of the coating type and application method allowed at the time of permit issuance. The permit requires that the inventory be updated whenever coater is modified, added, or replaced as allowed by the permit.

3.11 Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- The likelihood of the facility violating the applicable requirements.
- Whether add-on controls are necessary to meet the emission limits.
- The variability of emissions over time.
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit.
- The technical and economic feasibility of possible periodic monitoring methods.
- The kind of monitoring found on similar units elsewhere.

The table below summarizes the monitoring requirements associated with this amendment.

Table 9. Monitoring

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
COMG 1 (VOC and 1,2 (trans) Dichloroethylene Limits and VOC Coater, Water-Based Coater, UV Coater, and Solvent Distillation Operation Requirements)	VOC <= 90.0 tons/yr 12-month rolling sum [Title I Condition: Avoid major source under 40 CFR 52.21(b)(1)(i) and 40 CFR 70.2]	Recordkeeping: Daily records of coating usage; purchase records of solvent; on-going records of coating contents; monthly calculations of emissions; continuous emissions monitoring; ambient monitoring	Records can be generated on a daily basis with a combination of daily usage logs, and calculation of monthly emissions and 12-month rolling sums. Material content for each material must be determined as required by the Material Content requirement at COMG 1. CEMS will ensure reliability of recordkeeping of usage in the coating rooms and ambient monitoring will provide information on the concurrence with emissions trends to ensure the t-DCE HBV is not exceeded. Credit can be taken for waste materials collected and shipped off-site (usage - waste = emissions).
	1,2-(trans) Dichloroethylene <= 32.6 tons/yr 365-day rolling sum [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Recordkeeping: Daily records of t-DCE coating usage; t-DCE containing material recovered from the distiller and exiting the facility in waste; on-going records of t-DCE content in coatings, used solvent and waste; daily calculations of emissions; Continuous emissions monitoring; ambient monitoring. Quarterly t-DCE purchase and inventory audit	Records can be generated on a daily basis with a combination of daily usage logs, and calculations of daily emissions and 365-day rolling sums. Material content for each material must be determined as required by the Material Content requirement at COMG 1. CEMS will ensure reliability of recordkeeping of VOC usage in the coating rooms and ambient monitoring will provide information on the concurrence with emissions trends and ensure the t-DCE HBV is not exceeded. Credit can be taken for waste materials collected and shipped off-site (usage - waste = emissions).
COMG 5 (Coating Room Requirements)	Pressure Drop <= -0.007" H_2O [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Recordkeeping: CPMS; alarms; performance testing	Continuous Parameter Monitoring System (CPMS) will continuously monitor pressure drop across each entrance, each with an alarm that sounds when pressure drop is above the set point.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
COMG 6 (Indirect Heating Equipment Rule Requirements)	PM <= 0.40 lb/MMBtu Opacity <= 20.0% [Minn. R. 7011.0515]	Recordkeeping: monthly fuel records	All units use natural gas; therefore, the likelihood of violating either of the emission limits is very small. The Permittee can demonstrate that these units will continue to operate such that emissions are well below the emission limits by only burning natural gas. Design based PTE for each unit, using AP-42, is 0.0075 lb/MMBtu of PM compared to the rule limit of 0.4 lb/MMBtu of PM.
COMG 7 (Industrial Process Equipment Rule Requirements)	PM <= 0.30 gr/dscf Opacity <= 20% [Minn. R. 7011.0715]	None	Applicable rule limits are above calculated potential to emit based on maximum throughput and airflow.
COMG 10 (NOx: North Building Space Heating and Operation Limits)	Heat Input <= 10.68 MMBtu [Minn. R. 7007.0800, subps. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Heating unit inventory and recordkeeping	The permit requires the facility to keep an up-to-date inventory of all space heating units. These records must be available for MPCA inspection.
	PM < 10 micron <= 0.07966 pounds per hour 3-hour average PM < 2.5 micron <= 0.07966 pounds per hour 3-hour average Nitrogen Oxides <= 1.0482 pounds per hour 3-hour average Lead <= 0.000005 pounds per hour 3-hour average [Minn. R. 7007.0800, subps. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	None	Emissions from units in COMG 10 were modeled at their maximum capacity. No further monitoring is required.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
COMG 11 (HEPA Filter and Electrostatic Precipitator Control Equipment Train - Melt Pots)	PM >= 97.0 percent control efficiency PM10 >= 97.0 percent control efficiency PM2.5 >= 97.0 percent control efficiency Lead >= 86.0 percent control efficiency [Avoid a major source under Part 70.2, Minn. R. 7007.0800, subp. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Daily and periodic inspections, operation and maintenance, corrective actions, performance testing, and recordkeeping.	Monitoring based on the Minnesota Performance Standard for Control Equipment is adequate to have a reasonable assurance of compliance.
COMG 12 (HEPA Filter and Electrostatic Precipitator Control Equipment Train – Die Casting)	PM >= 86.6 percent control efficiency PM10 >= 86.6 percent control efficiency PM2.5 >= 86.6 percent control efficiency [Avoid a major source under Part 70.2, Minn. R. 7007.0800, subp. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Daily and periodic inspections, operation and maintenance, corrective actions, performance testing, and recordkeeping.	Monitoring based on the Minnesota Performance Standard for Control Equipment is adequate to have a reasonable assurance of compliance.
COMG 13 (Direct Heating Equipment Rule Requirements)	PM <= 0.30 gr/dscf Opacity <= 20% [Minn. R. 7011.0610, subps. 1(A)(1) & (2)]	Recordkeeping: fuel records	These units use natural gas only; therefore, the likelihood of violating either of the emission limits is very small. The Permittee can demonstrate that these units will continue to operate such that emissions are well below the emission limits by only burning natural gas.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
COMG 14 (HEPA Filters – Spray Coaters)	PM >= 99.98% control efficiency PM < 10 micron >= 99.98% control efficiency PM < 2.5 micron >= 99.90% control efficiency [Avoid a major source under Part 70.2, Minn. R. 7007.0800, subp. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Daily recordkeeping, O & M, periodic inspections	Monitoring based on the Minnesota Performance Standard for Control Equipment is adequate to have a reasonable assurance of compliance.
COMG 15 (NOx: South Building Space Heating and Operation Limits)	Heat Input <= 2.18 MMBtu (South Building) [Minn. R. 7007.0800, subps. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Heating unit inventory and recordkeeping	The permit requires the facility to keep an up-to-date inventory of all space heating units. These records must be available for MPCA inspection.
	PM < 10 micron <= 0.0171 pounds per hour 3-hour average PM < 2.5 micron <= 0.0171 pounds per hour 3-hour average Nitrogen Oxides <= 0.2248 pounds per hour 3-hour average Lead <= 0.000001 pounds per hour 3-hour average [Minn. R. 7007.0800, subps. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	None	Emissions from units in COMG 15 were modeled at their maximum capacity. No further monitoring is required.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
COMG 16 (Die Casting Annual Throughput and Lead Emission Limits)	Process Throughput <= 39,355.50 tons per year 365-day rolling sum Captured Lead <= 48.21 pounds per year 365-day rolling sum Uncaptured Lead <= 8.46 pounds per year 365-day rolling sum [Minn. R. 7007.0800, subps. 2(A) & 2(B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 101 (CF Scrap Re-Melt Pot)	Process Throughput <= 2,180 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 102 (Small Re-Melt Pot)	Process Throughput <= 1,000.0 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 103 (Doe Run Melt Pot)	Process Throughput <= 240.0 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 104 (CF Re-Melt Pot)	Process Throughput <= 4,000.0 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 120 (Emergency Generator)	NMHC+NOx <= 4.7 g/kW-hr PM <= 0.40 g/kW-hr CO <= 5.0 g/kW-hr Opacity <= 15% Opacity <= 20% Opacity <= 50% Sulfur Content <= 15.0 ppm [40 CFR 60.4202(a)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]	Fuel Supplier Certification for each shipment of diesel fuel; non-resettable hour meter, and recordkeeping.	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
	Opacity <= 20% SO_2 <= 0.0015 lb/MMBtu [Minn. R. 7011.2300]		
EQUI 121 (DC09)	Process Throughput <= 290.53 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 122 (DC12)	Process Throughput <= 872.10 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 123 (DC33)	Process Throughput <= 401.24 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 124 (DC14)	Process Throughput <= 500.01 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 125 (DC15)	Process Throughput <= 233.75 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 126 (DC21)	Process Throughput <= 530.77 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 127 (DC08)	Process Throughput <= 129.56 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 128 (DC10)	Process Throughput <= 399.71 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 129 (DC17)	Process Throughput <= 220.83 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 130 (DC18)	Process Throughput <= 204.30 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 131 (DC36)	Process Throughput <= 634.27 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 132 (DC37)	Process Throughput <= 552.50 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 133 (DC25)	Process Throughput <= 462.53 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 134 (DC22)	Process Throughput <= 452.85 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 135 (DC35)	Process Throughput <= 893.96 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 136 (DC32)	Process Throughput <= 893.96 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 137 (DC26)	Process Throughput <= 330.59 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 138 (DC27)	Process Throughput <= 555.28 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 139 (DC16)	Process Throughput <= 596.70 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 140 (DC28)	Process Throughput <= 465.62 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 141 (DC29)	Process Throughput <= 740.14 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 142 (DC19)	Process Throughput <= 555.90 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 143 (DC34)	Process Throughput <= 462.53 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 146 (DC42)	Process Throughput <= 1199.66 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 147 (DC38)	Process Throughput <= 1199.66 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 149 (DC40)	Process Throughput <= 596.70 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 150 (DC48)	Process Throughput <= 613.11 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 152 (DC41)	Process Throughput <= 1305.27 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 153 (DC44)	Process Throughput <= 1179.85 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 154 (DC45)	Process Throughput <= 1132.90 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 155 (DC52)	Process Throughput <= 462.53 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 156 (DC50)	Process Throughput <= 855.22 pounds per hour daily average. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 157 (DC51)	Process Throughput <= 1305.27 pounds per hour daily average. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 158 (DC53)	Process Throughput <= 1233.40 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 160 (Billet Saw)	Process Throughput <= 1000.0 pounds per hour daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping, calculations, and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.
EQUI 221 (Tin Melt Pot)	Process Throughput <= 2500.0 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily recordkeeping of process throughput; daily calculations	Daily usage recordkeeping and performance testing to verify and reset emission factors used in calculations will provide reasonable assurance that the process limit and emission limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 1 (Smog Hog #15 Stack)	PM < 10 <= 0.1012 lb/hr daily average PM < 2.5 <= 0.1012 lb/hr daily average Lead <= 0.00297 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
STRU 15 (Smog Hog #1 Stack)	PM < 10 micron <= 0.03887 lb/hr daily average PM < 2.5 <= 0.03887 lb/hr daily average Lead <= 0.0230 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 16 (Smog Hog #2 Stack)	PM < 10 <= 0.06388 lb/hr daily average PM < 2.5 <= 0.06388 lb/hr daily average Lead <= 0.03778 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
STRU 17 (Smog Hog #3 Stack)	PM < 10 <= 0. 01864 lb/hr daily average PM < 2.5 <= 0. 01864 lb/hr daily average Lead <= 0. 01103 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 20 (Smog Hog #6 Stack)	PM < 10 <= 0.02523 lb/hr daily average PM < 2.5 <= 0.02523 lb/hr daily average Lead <= 0. 01492 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
STRU 23 (Smog Hog #9 Stack)	PM < 10 <= 0.02222 lb/hr daily average PM < 2.5 <= 0.02222 lb/hr daily average Lead <= 0. 01314 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 24 (Smog Hog #10 Stack)	PM < 10 <= 0.02202 lb/hr daily average PM < 2.5 <= 0.02202 lb/hr daily average Lead <= 0.01302 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
STRU 25 (Smog Hog #11 Stack)	PM < 10 <= 0.02641 lb/hr daily average PM < 2.5 <= 0.02641 lb/hr daily average Lead <= 0.01562 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 26 (Smog Hog #12 Stack)	PM < 10 <= 0.05521 lb/hr daily average PM < 2.5 <= 0.05521 lb/hr daily average Lead <= 0.03265 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
STRU 30 (Smog Hog #16 Stack)	PM < 10 <= 0.06048 lb/hr daily average PM < 2.5 <= 0.06048 lb/hr daily average Lead <= 0. 03577 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 31 (Smog Hog #17 Stack)	PM < 10 <= 0. 02982 lb/hr daily average PM < 2.5 <= 0.02982 lb/hr daily average Lead <= 0.01764 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
STRU 32 (Smog Hog #18 Stack)	PM < 10 <= 0.03007 lb/hr daily average PM < 2.5 <= 0.03007 lb/hr daily average Lead <= 0.01788 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 33 (Smog Hog #19 Stack)	PM < 10 <= 0.05370 lb/hr daily average PM < 2.5 <= 0.05370 lb/hr daily average Lead <= 0.03176 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
STRU 34 (Smog Hog #20 Stack)	PM < 10 <= 0.05749 lb/hr daily average PM < 2.5 <= 0.05749 lb/hr daily average Lead <= 0.03400 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 35 (Smog Hog #21 Stack)	PM < 10 <= 0.01710 lb/hr daily average PM < 2.5 <= 0.01710 lb/hr daily average Lead <= 0.01059 lb/day 92-day rolling average Lead <= 0.9412 lb/yr 365-day rolling sum [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from EQUI 160 (billet saw) and EQUI 117 (R&D UV coater) discharge to the room and the room emissions are vented through this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping will provide reasonable assurance that the limit will not be exceeded. EQUI 160 only runs a maximum of 20 tons throughput in an entire quarter and a few hours per week. EQUI 117 is only used occasionally for R&D purposes. Performance testing would entail long particulate runs (8 hours each, because of the very low estimated concentrations), which would amount to greater run-time for testing purposes than either unit's typical runtime in a given week. Emission factors for billet saw were based on AP-42 factors and test data for UV coaters was used to determine emission factors for EQUI 117.
STRU 41	1, 2 (trans-) Dichloroethylene <= 0.0010 lb/hr based on a 3-hour average Trichloroethylene <= 0.00006 lb/hr based on a 3-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a) & 9(2)]	Sampling and analysis of influent and effluent concentrations. Operation of the solvent vapor remediation system, inspections and corrective actions.	The emission limits at the stack represent the modeled emission rates. AERA conducted with these emission rates showed compliance with health benchmarks. These emissions represent asymptotic levels of emissions from the solvent vapor remediation system. The MPCA Remediation Division is overseeing the operation of this system and the control equipment will remain in operation until removal is approved by the MPCA Remediation Division.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 43 (North Building Vent 7)	PM < 10 <= 0.01896 lb/hr daily average PM < 2.5 <= 0.01896 lb/hr daily average Lead <= 0.01488 lb/day 92-day rolling average NOx <= 0.1826 pounds per hour 1-hour average. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping;	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 106 and 109, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.
STRU 44 (North Building Vent 1)	PM < 10 <= 0.07081 lb/hr daily average PM < 2.5 <= 0.07081 lb/hr daily average Lead <= 0.01061 lb/day 92-day rolling average NOx <= 0.4070 pounds per hour 1-hour average. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping;	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 107, 108, and 111, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 45 (North Building Vent 2)	PM < 10 <= 0.05712 lb/hr daily average PM < 2.5 <= 0.05712 lb/hr daily average Lead <= 0.006982 lb/day 92-day rolling average NOx <= 0.4070 pounds per hour 1-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 107, 108, and 111, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.
STRU 46 (North Building Vent 3)	PM < 10 <= 0.04535 lb/hr daily average PM < 2.5 <= 0.04535 lb/hr daily average Lead <= 0.003868 lb/day 92-day rolling average NOx <= 0.4070 pounds per hour 1-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 107, 108, and 111, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 47 (North Building Vent 4)	PM < 10 <= 0.02241 lb/hr daily average PM < 2.5 <= 0.02241 lb/hr daily average Lead <= 0.001958 lb/day 92-day rolling average NOx <= 0.1987 pounds per hour 1-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 106 and 108, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.
STRU 48 (North Building Vent 5)	PM < 10 <= 0.02520 lb/hr daily average PM < 2.5 <= 0.02520 lb/hr daily average Lead <= 0.003020 lb/day 92-day rolling average NOx <= 0.1826 pounds per hour 1-hour average. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from Make-up Air units EQUI 106 and 109, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 49 (North Building Vent 6)	PM < 10 <= 0.01779 lb/hr daily average PM < 2.5 <= 0.01779 lb/hr daily average Lead <= 0.001057 lb/day 92-day rolling average NOx <= 0.1823 pounds per hour 1-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 106 and 109, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.
STRU 50 (North Building Vent 8)	PM < 10 <= 0.01688 lb/hr daily average PM < 2.5 <= 0.01688 lb/hr daily average Lead <= 0.002092 lb/day 92-day rolling average NOx <= 0.1213 pounds per hour 1-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 109, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 51 (North Building Vent 9)	PM < 10 <= 0.05654 lb/hr daily average PM < 2.5 <= 0.05654 lb/hr daily average Lead <= 0.01006 lb/day 92-day rolling average NOx <= 0.2453 pounds per hour 1-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 110 and 112, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.
STRU 52 (North Building Vent 10)	PM < 10 <= 0.04234 lb/hr daily average PM < 2.5 <= 0.04234 lb/hr daily average Lead <= 0.006304 lb/day 92-day rolling average NOx <= 0.2453 pounds per hour 1-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 110 and 112, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 53 (North Building Vent 11)	PM < 10 <= 0.03630 lb/hr daily average PM < 2.5 <= 0.03630 lb/hr daily average Lead <= 0.004705 lb/day 92-day rolling average NOx <= 0.2453 pounds per hour 1-hour average. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 110 and 112, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.
STRU 56 (North Building Vent 14)	PM < 10 <= 0.0429 lb/hr daily average PM < 2.5 <= 0.0429 lb/hr daily average Lead <= 0.00644 lb/day 92-day rolling average NOx <= 0.2453 pounds per hour 1-hour average. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, and 92 rolling average limits for lead. Daily calculations and recordkeeping. A conservative amount of uncaptured emissions are assumed to be vented through to this stack. The captured emissions from the associated stack will be tested and this will provide reasonable assurance that the limit will not be exceeded. NOx is the emission rate used in modeling and it represents the contributions from makeup air units EQUI 110 and 112, since the combustion emissions were calculated at capacity, no other conditions is required to assure compliance with the emission limit.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 57 (North Building Vent 20)	PM < 10 <= 0.00109 lb/hr based on 3-hour average PM < 2.5 <= 0.00109 lb/hr based on 3-hour average Lead <= 0.00002 lb/hr based on 3-hour average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Performance testing	The emission limits at the stack represent the modeled emission rates at design capacity and with operation of controlled equipment, therefore process record keeping and calculations are not needed. The performance test will verify controlled emission rates based on emission factors and assumed control efficiencies provided with permit application.
STRU 72 (Fume Hood Vent)	PM < 10 <= 0.006336 lb/hr daily average PM < 2.5 <= 0.006336 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping	The emission limits at the stack represent the emission rates at design capacity. The modeling results show higher emission rates as a conservative approach. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$. Daily calculations and recordkeeping.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 73 (Battery Terminal Post Coater Stack)	PM < 10 <= 0.01012 lb/hr daily average PM < 2.5 <= 0.01012 lb/hr daily average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$. Daily calculations, recordkeeping and performance testing will provide reasonable assurance that the limit will not be exceeded
STRU 74 (Smog Hog #5 Stack)	PM < 10 <= 0.02084 lb/hr daily average PM < 2.5 <= 0.02084 lb/hr daily average Lead <= 0.01233 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a), To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, 92 rolling average limits for lead and 365 rolling sums limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
STRU 75 (Smog Hog #8 Stack)	PM < 10 <= 0.03348 lb/hr daily average PM < 2.5 <= 0.03348 lb/hr daily average Lead <= 0.01980 lb/day 92-day rolling average [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a),-_To avoid major source under 40 CFR 70.2 & Minn. R. 7007.0200]	Daily emissions calculations and recordkeeping; performance testing	Emissions from several units discharge to this stack. The emission limits at the stack represent the modeled emission rates. PM_{10} and $PM_{2.5}$ are 24-hour standards and the daily process rates will be used to show compliance with daily limits for PM_{10}, $PM_{2.5}$, 92 rolling average limits for lead and 365 rolling sums limits for lead. Daily calculations, recordkeeping, and performance testing will provide reasonable assurance that the limit will not be exceeded.
TREA 1 (Smog Hog #15) TREA 25 (Smog Hog #1) TREA 26 (Smog Hog #2) TREA 27 (Smog Hog #3) TREA 30 (Smog Hog #6) TREA 33 (Smog Hog #9) TREA 34 (Smog Hog #10) TREA 35 (Smog Hog #11) TREA 36 (Smog Hog #12) TREA 39 (Smog Hog #16) TREA 40 (Smog Hog #17) TREA 41 (Smog Hog #18) TREA 42 (Smog Hog #19) TREA 43 (Smog Hog	Avoid major source under 40 CFR 70.2, Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	Data collection: continuous hard copy readout or computer disk file that shows the On/Off condition of the ESP at all times	The continuous records will ensure the control equipment is operating when the emission units are operating, and will provide reasonable assurance that the emission limits will not be exceeded.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
#20) TREA 78 (Smog Hog #5) TREA 79 (Smog Hog #8)			
TREA 60 (Nederman Filter 15N - STRU 1) TREA 61 (Nederman Filter 1N - STRU 15) TREA 62 (Nederman Filter 2N1 - STRU 16) TREA 63 (Nederman Filter 2N2 - STRU 16) TREA 64 (Nederman Filter 3N - STRU 17) TREA 65 (Nederman Filter 4N - STRU 74) TREA 66 (Nederman Filter 6N - STRU 20) TREA 67 (Nederman Filter 7N – STRU 75) TREA 68 (Nederman Filter 9N - STRU 23) TREA 69 (Nederman Filter 10N - STRU 24) TREA 70 (Nederman Filter 11N - STRU 25) TREA 71 (Nederman Filter 12N1 - STRU 26) TREA 72 (Nederman Filter 12N2 - STRU 26) TREA 73 (Nederman Filter 16N - STRU 30) TREA 74 (Nederman Filter 17N - STRU 31) TREA 75 (Nederman Filter 18N - STRU 32) TREA 76 (Nederman Filter 19N - STRU 33) TREA 77 (Nederman Filter 20N - STRU 34)	Stage 1 Filter Pressure Drop >= 0.0001 and <= 0.600 kilopascals Stage 2 Filter Pressure Drop >= 0.0001 and <= 0.800 kilopascals [Minn. R. 7007.0800, subps. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]	Daily pressure drop recordkeeping, O & M, periodic inspections, performance testing	Monitoring based on the Minnesota Performance Standard for Control Equipment is adequate to have a reasonable assurance of compliance.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

3.12 Insignificant activities

Water Gremlin Co has several operations which are classified as insignificant activities under the MPCA's permitting rules. These are listed in Appendix A to the permit. The following insignificant activities are included in this modification.

Table 10. Insignificant activities

Insignificant activity	General applicable emission limit	Discussion
Brazing, soldering, torch-cutting, or welding equipment	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011.0715)	For these units, based on EPA published emissions factors, it is highly unlikely that they could violate the applicable requirement. In addition, these units are typically operated and vented inside a building, so testing for PM or opacity is not feasible. (Welding)
Individual units with potential emissions less than 2000 lb/year of certain pollutants	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011.0715)	For these units, based on EPA published emissions factors, it is highly unlikely that they could violate the applicable requirement. In addition, these units are typically operated and vented inside a building, so testing for PM or opacity is not feasible. (Parts washer)

3.13 Permit organization

In general, this permit meets the MPCA Tempo Guidance for ordering and grouping of requirements as well as the use of permit appendices. However, federal requirements from NSPS are included in a different format from past permits. For these rules, limits and submittal/actions from 40 CFR pt. 60, subp. IIII are included individually in the permit like the other standards. For the remaining portions of the rule and the associated General Provisions in 40 CFR pt. 60, subp. A, a requirement in Section 5 of the permit lists the citations of all of the applicable parts of the standard along with a reference to the permit appendix where the full text of the standard is included. Copies of each standard written in this format are included in Appendices H and I, respectively.

3.14 Comments received

Public Notice Period: [start date] – [end date]
EPA Review Period: [start date] – [end date]

4. Permit fee assessment

Attachment 3 to this TSD contains the MPCA's assessment of Application and Additional Points used to determine the permit application fee for this permit action as required by Minn. R. 7002.0019. The permit action includes three permit applications, of which include the incorporation of applicable NSPS and NESHAP standards, limits to avoid PSD and Part 70 regulations, NAAQS modeling, and an AERA. Each of these are chargeable activities under the rule and are summarized in Attachment 3.

5. Conclusion

Based on the information provided by Water Gremlin Co the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 12300341-101 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

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David Brown (risk evaluation and air modeling)
Kristie Ellickson (environmental analysis and outcomes)
Jennifer Carlson (air compliance and enforcement)
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Joe Handtman (document coordinator)
Laurie O'Brien (administrative support)

Tempo Activities: Administrative Amendment (IND20160001), Major Amendment (IND20180001), Major Amendment (IND20190001), Notification of Installation of Controls (IND20210001)

Attachments:
1. PTE summary, NAAQS modeling parameters, and Water Gremlin AERA input parameters
1.a. MPCA corrected RASS
2. Subject item inventory and requirements report
3. Points calculator
4. Copy of Administrative Order, signed January 17, 2020
5. Copy of the Stipulation Agreement, executed March 1, 2019
6. Reported Cumulative VOC Emissions from Fluosolv and Highest 365-Rolling Average Ambient Concentrations of t-DCE
7. Correlation of Solvent Usage Versus CEMS Readings at the Stack
8. Minnesota Department of Health Risk Assessment Advice for trans-1, 2-Dichloroethylene
9. Minnesota Department of Health “trans-1,2-dichloroethylene (CAS No. 156-60-5) 2020 Risk Assessment Advice Follow-up”