

February 20, 2024

Mr. Ryan Zaremba
SludgeHammer Group, Ltd.
4772 US 131 South, Building D
Petoskey, Michigan 49770

RE: Product Registration – Notice of Interim Conditional Product Registration for Proprietary Treatment Product Listing

Description: Sewage Treatment System, Aerobic Bacterial Generator Digester
Manufacturer: SludgeHammer Group, Ltd.
Product Name: SludgeHammer
Model Number: S-86, S-86 with Tank Bottom Diffuser, S-86 with Medusa Diffuser
Product Listing: Category B (high strength sewage)

Dear Mr. Zaremba:

Thank you for your product application dated August 28, 2023, for the SludgeHammer, including Models S-86, S-86 with Tank Bottom Diffuser, and S-86 with Medusa Diffuser.

In accordance with Minn. R. chs. 7080 through 7083, the Minnesota Pollution Control Agency (MPCA) has reviewed SludgeHammer Group, Ltd. submitted materials requesting registration for Category B (high strength sewage) treatment product listing of the SludgeHammer in this application. Based on the submitted documentation, the MPCA finds that the SludgeHammer is eligible for Interim Conditional Product Registration as meeting the following treatment level:

- **Treatment Level C** (cBOD₅ of 125 mg/L, TSS of 60 mg/L and Oil & Grease of 25 mg/L)

The SludgeHammer is conditionally registered with a design rated capacity of 2.5, 3.75 and 5 pounds of BOD₅ per day, as shown in Table 1, for high strength wastewater applications only.

Subject to this determination, the SludgeHammer (Models S-86, S-86 with Tank Bottom Diffuser, and S-86 with Medusa Diffuser) will be placed on the List of Registered Subsurface Sewage Treatment System (SSTS) Products for High Strength Wastewater. The product information listed in this Notice of Interim Conditional Product Registration for Proprietary Treatment Product Listing will be maintained on the MPCA website and may not be altered or misrepresented by the manufacturer or any other person without permission by the MPCA.

Table 1. SludgeHammer, Models S-86, S-86 with Tank Bottom Diffuser, and S-86 with Medusa Diffuser

Product Name Model	Treatment Process	Maximum Design Flow (gallons per day)	BOD5 Loading (lbs/day)	Registered Treatment Level	Important Product Use Information
S-86	Aerobic Bacterial Generator	500	2.5	C	<ul style="list-style-type: none"> • Notice of Interim Conditional Product Listing <ul style="list-style-type: none"> ○ MPCA Letter ○ Conditions of Registration ○ Expiration Date
S-86 with Tank Bottom Diffuser	Aerobic Bacterial Generator	750	3.75	C	<ul style="list-style-type: none"> • The SludgeHammer Manual <ul style="list-style-type: none"> ○ Submitted Drawings ○ Sizing Guideline Calculator ○ Design Instructions ○ Site Evaluation Form ○ Installation Instructions ○ Installation Check List ○ Operation & Service Manual ○ Service Visit Record • Management Plan • Operating Permit Template
S-86 with Medusa Diffuser	Aerobic Bacterial Generator	1000	5	C	<ul style="list-style-type: none"> • Management Plan • Operating Permit Template

* The SludgeHammer is registered for residential and commercial high strength wastewater applications and high strength wastewater remediation with design flows up to 10,000 gallons per day.

The registration of the treatment products in Minnesota is contingent upon compliance with the following conditions:

1. Products must be used in compliance with the MPCA rules and the plans and design information provided during the period of initial product application. The SludgeHammer must not be used on a system failing to protect groundwater as defined in Minn. R. 7080.1500, subp. 4(B).
2. The manufacturer shall have readily accessible information, specific to a product’s registered use in Minnesota, for designers, regulators, installers, system owners, service providers and other

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interested parties for the following items: a) product manual; b) design instructions; c) installation instructions; d) information regarding operation and maintenance; e) homeowner instructions; and f) list of representatives and manufacturer-certified service providers, if any, as required by Minn. R. 7083.4040 (H).

3. The design parameters for pounds of BOD₅ applied to the SludgeHammer, including Model S-86, S-86 with Tank Bottom Diffuser and S-86 with Medusa Diffuser are as follows for commercial and residential high strength applications and high strength wastewater remediation:
 - i. 2.5 pounds BOD₅ per day for the SludgeHammer S-86 Model
 - ii. 3.75 pounds BOD₅ per day for the SludgeHammer S-86 with Tank Bottom Diffuser
 - iii. 5.0 pounds BOD₅ per day for the SludgeHammer S-86 Model with Medusa Diffuser

These configurations can be combined and scaled in any arrangement to meet design flow and pounds BOD₅ removed per day.

4. The manufacturer's designated representative is required to review all designs provided by Intermediate/Advanced Designers (i.e.: evaluation worksheets for high strength wastewater) for treatment systems proposed to use the SludgeHammer. Designers need to work directly with the manufacturer to ensure the wastewater is properly characterized and that SludgeHammer high strength wastewater treatment products, and other related components used in treatment train (i.e.: grease interceptors, septic tanks, surge tanks and clarifier tanks), are properly sized and compatible to meet designed performance requirements.
5. Systems installed using SludgeHammer S-86 must install a grease interceptor to manage oil and grease if the facility waste strength is over 25mg/l. The external grease interceptor (also known as external grease trap and grease tank) shall be sized according to the manufacturer's size requirements.
6. The manufacturer's designated representative will issue a review letter to the Designer documenting: 1) details of the manufacturer's review, and 2) agreement that the product is an appropriate fit for the planned system at the facility. The review letter will be signed by the manufacturer's designated representative.
7. Systems installed using the SludgeHammer S-86 require a trash tank prior to the septic tank. Trash tank capacity shall meet the minimum size requirements as specified by the manufacturer and other applicable tank requirements from Minn. R. 7080.1910 to 7080.2030.
8. Trash (septic) and treatment tanks used in conjunction with the SludgeHammer S-86 must be sized by multiplying the design flow by 4.0 at a minimum and must be registered for use by the MPCA.
9. Sewage tank capacity, tank geometry, burial depth, and other tank requirements shall meet the manufacturer's requirements. Sewage tanks must be registered for use in the state of Minnesota. The tank must have at least 42 inches of liquid level and have 4-6 inches of liquid level over the Aerobic Bacterial Generator.
10. Each system must be delivered with an installation manual and owner's manual for the SludgeHammer. Each component must be installed in accordance with the manufacturer's

installation manual. Each system using the S-86 must have the filter that is approved by manufacture.

11. The level of maintenance required for SludgeHammer components shall be as specified in the products Operation and Maintenance Manual. This includes, but is not limited to, inspections and maintenance at six-month intervals, or as specified in the local operating permit. The SludgeHammer Blend Bag (bacterial packets) must be replaced annually.
12. To protect for potential system malfunction, all systems shall be designed and operated with a suitable alarm device(s) that monitors the SludgeHammer and its various components.
13. The treatment products contained in this notice of product registration are considered a Minnesota-registered product for Type IV High Strength Waste systems.
14. The SludgeHammer (Models S-86, S-86 with Medusa or S-86 with Tank Bottom Diffuser) is registered to be used in systems to achieve Treatment Level C. The effluent loading rates to the soil, method of distribution, and vertical separation requirements shall meet the minimum requirements contained in Minn. R. 7080.2150 for flows less than 5000 gpd. For flows greater than 5000 gpd, final treatment and dispersal must also meet Minn. R. 7081.0270. Systems installed using the SludgeHammer must be installed using pressure distribution. Pump tanks used must meet minimum requirements of Minn. R. 7080.2100, subp. 2. An alarm device is required on all pump tanks in the event the pump malfunctions.
15. Systems may only be designated as Type IV systems when designed and installed per the drawings submitted as part of the Application for Registration and subsequent documents submitted prior to this registration.
16. As a Type IV system, the system must be constructed and operated under the required local permits.
17. The manufacturer is responsible to provide a listing of other known limitations, to be made available on the company's website or other means. The level of maintenance required for the SludgeHammer shall be as specified in the Operation and Service Manual.
18. Training shall be provided to MPCA-licensed Subsurface Sewage Treatment System practitioners before designing, installing, or providing service to SludgeHammer treatment systems registered for use in Minnesota.
19. During the period of product registration and as part of the renewal process, systems using registered treatment products are subject to an audit by the MPCA.
20. At the time of product renewal during the year 2027 and according to the "Proprietary treatment technology registration guidance – high strength waste". Manufacturers must submit data in accordance with the HSW verification protocol for each system installed under this protocol. If product manufacturers fail to submit data as outlined in the HSW verification protocol for each system installed their registration will be discontinued until submission of the required data. Renewal requirements as stated in this guidance will be communicated to manufacturers in a letter from the MPCA prior to their expiration deadline. Product manufacturers must submit renewal materials as specified in their renewal letters.

HSW verification protocol

An established set of requirements to verify product performance is necessary to set a consistent standard among all registered HSW treatment technologies. This protocol (table 1) takes one full year to complete and as mentioned previously must be completed on every system installed after registration, in perpetuity, until such time that the TAP modifies, expands, alters, or cancels the protocol requirements.

Table 1. HSW verification protocol

Item	Description
Sample identification	Third-party sample reports must clearly indicate from which system/facility the samples were derived. Reports must also contain sample dates and times, sample location information, name of sampler, chain of custody information, sample collection method, and sample transportation information (time/container/temperature).
Sampling intervals	Four (4) sampling events (for both influent and effluent analysis as described below) must be taken quarterly each calendar year. The TAP will consider alternate intervals on seasonal use facilities to ensure required sampling events align with peak usage. Example: Q1: Jan – Mar, Q2: Apr – Jun, Q3: Jul – Sep, and Q4: Oct – Dec.
Influent sampling	Influent BOD ₅ , TSS, and O&G composite/grab samples must be taken at the first location of sewage collection within the system and be representative of the waste being discharged from the facility. Each of these three constituents must be sampled at each sampling event per facility.
Influent waste characterization	For each set of influent data provided, the waste must be characterized as HSW in accordance with Minn. R. 7080.1550, subp. 2 B (1). Raw sewage must exceed 300 mg/L BOD ₅ , 200 mg/L TSS, and/or 50 mg/L O&G in order to be considered high strength waste.
Effluent sampling	Effluent cBOD ₅ (or BOD ₅), TSS, and O&G composite/grab samples must be taken after the treatment device and before discharge to the soil dispersal area. Each of these constituents must be sampled for each sampling event per facility.
Effluent waste results	In all cases, the effluent waste concentrations must meet, at a minimum, the outlined parameters for Treatment Level C: BOD ₅ of 170mg/L (or cBOD ₅ of 125mg/L), TSS of 60mg/L, and O&G of 25mg/L.
Flow measurements	Daily flow for thirty (30) days prior to each sampling event must be provided.
Third-party testing	All sampling results must be submitted on original reports from third-party entities (e.g. certified laboratories).
O&M summary	Create an O&M summary specifying the maintenance performed throughout the test period, such as pumping events or adjustments made, and include a list of tasks necessary for the product to adequately perform within the specified parameters in all configurations. Tasks should be given a specific frequency for when each shall occur (e.g. every 6 months).
Summary report	Items 1-5 below shall be prepared in order for each system/facility: <ol style="list-style-type: none"> 1. Cover page with facility name, address, product model, and design flow 2. Influent results 3. Effluent results 4. Flow measurements – including system permitted design flow 5. O&M summary Combine the summary reports for each system/facility into one PDF document, and submit to the agency

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Full registration

A product will be granted full product registration once the manufacturer completes the Proprietary Treatment Product Application for Registration, undergoes formal review, and is verified through nationally recognized testing protocols in accordance with Minn. R. 7083.4010. Renewal for full registrations will be every three (3) years.

Final review and determination

The TAP will provide review of the summary reports submitted and make recommendations to the agency for conditional or full product registration. The TAP has full discretion in their recommendations based on the intricacies surrounding each product's situation and registration at the time of review. Based on the recommendation from the TAP, the agency will make a final determination and develop a product registration letter reflecting their registration parameters and requirements.

Please be advised that this registration expires December 31, 2027. Manufacturers desiring to continue product registration beyond this date must obtain MPCA renewal according to the requirements in Minn. R. ch. 7083.4040 (E). If the product has changed or is retested according to the protocol required for registration, renewal shall be based on the most recent test results. If the MPCA finds the product has changed in any way that may affect performance, it may not be renewed and must meet the requirements for initial registration.

The MPCA is in no way endorsing these products or any advertising, and is not responsible for any situation which may result from its use or misuse. The MPCA is not liable for any product failure and these statements are not intended and cannot be relied upon to establish any substantive or procedural rights with the state of Minnesota or the MPCA, either express or implied, that can be enforced in litigation or any administrative proceeding.

If you have any questions, please contact Wendy Chirpich at 507-344-5248 or by email at wendy.chirpich@state.mn.us.

Sincerely,

Wendy Chirpich

This document has been electronically signed.

Wendy Chirpich
Environmental Specialist
Municipal Division

cc: File