



August 31, 2021

Gregory Boldt
Director of Public Works
City of Kenosha
625 52nd Street
Kenosha, WI 53140

Subject: Infiltration/Injection Temporary Exemption Request for
Former Kenosha Engine Plant (KEP), 5555 30th Avenue, Kenosha, Wisconsin
WDNR BRRTS Activity #: 02-30-000347, FID #: 230004500
WPDES Permit Site ID (FIN): 78189

Dear Mr. Boldt:

The purpose of this letter is to provide a temporary exemption for the injection of a remedial material into groundwater. A request for a temporary exemption to inject a combination of: in-situ chemical oxidation (ISCO), in-situ sorption, enhanced reductive dichlorination (ERD) and in-situ chemical reduction (ISCR) to treat volatile organic compounds (VOCs) in both soils and groundwater was received from your consultant Scott Mullin, REGENESIS Bioremediation Products, Inc. (Regenesis) on June 28, 2021. Supporting documentation included the Kenosha Engine Plant Design Approach and Rationale and the Kenosha Engine Plant, Injection Volume Evaluation and Responses (both dated August 18, 2021). The Wisconsin Department of Natural Resources (Department) also received a complete electronic Notice of Intent (eNOI) and Discharge Management Plan for the Contaminated Groundwater from Remedial Action Operations Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit on June 28, 2021. A review fee of \$ 700.00 was submitted on August 17, 2021. This temporary exemption is intended to provide assurances to the City of Kenosha that the environmental cleanup being conducted in response to a release of contaminants on the Property is being conducted in accordance with s. 292.12, Wis. Stats.

Regenesis proposes to treat groundwater contaminated with VOCs in four targeted areas, Areas 1 through Area 4, shown on Figure 2 of the request. The compounds to be injected are: Persulfate-based oxidant, PersulfOx, In-situ sorption based treatment, PlumeStop, 3-D Microemulsion (3DME), a hydrogen release compound (HRC) used as an electron donor to support enhanced reductive dichlorination (ERD), and BDI +, a microbial culture containing bacteria capable of fully degrading the contaminants for the ERD process, S-MZVI an ISCR based treatment used for abiotic destruction of the contaminants. The proposed chemical concentrations and ratios to be used for the injection are as follows: PersulfOx (15% solution, weight/weight (w/w), 3DME (5 to 6 %) solution w/w, S-MZVI (3,320 to 11, 800 mg/L solution, PlumeStop (10,000 to 15, 000) mg/L solution, HRC (non-dilute solution and BDI+ (co-applied with 3DME/PlumeStop) via a slip stream injections at a 1.0×10^{11} cells/L).

The injectant mixture (water & reagent) will be done in a conically shaped graduated 300-gallon mix tank where reagents have been placed using a powered diaphragm pump. A homogenous injection solution using vortex mixers will be created. BDI plus will be introduced directly into the injection hose using a slip stream method. Nitrogen gas will be used to push the BDI plus directly into the injection

hose. RegenesiS will inject the HRC in the ratio of 2:1 (HRC to Water). Portable City of Kenosha water will be used for the reagent mixing. The injection will be performed using direct push technology. The target treatment zone is estimated at depths of 9 to 23 feet with average thickness depths of 12 feet. Injection flow rates are estimated at 20 gallons per minute (gpm) and they will not exceed pressure rates of 50 psi. Field notes will record/document the preparation of the diluted substrate mixture. RegenesiS will monitor injection pressure, volume, groundwater elevation changes and groundwater parameter changes.

Determination on the NR 812 Injection Prohibition:

The injection prohibition under s. NR 812.05, Wis. Adm. Code, is not applicable in this case because the proposed action is a Department-approved activity necessary for the remediation of groundwater. This letter serves as your approval from the dated August 18, 2021 to inject PlumeStop® Liquid Activated Carbon™, Sulfidated Microscale Zero Valent Iron, 3-D Microemulsion Bio-Dechlor Inoculum, Hydrogen Release Compound and PersulfOx to treat CVOCs and VOCs in groundwater, in accordance with this temporary exemption.

NR 140 Temporary Exemption:

Department approval is hereby granted to REGENESIS Bioremediation Products, Inc. for the injection of PlumeStop® Liquid Activated Carbon™, Sulfidated Microscale Zero Valent Iron, 3-D Microemulsion, Bio-Dechlor Inoculum, Hydrogen Release Compound and PersulfOx to groundwater on the Former KEP property, with certain terms and conditions. The expiration date of this temporary exemption shall be less than 3 years from the date of this letter.

The need to obtain a temporary exemption for the injection of a remedial material for which a groundwater quality standard has not been established is required under s. NR 140.28 (1) (d), Wis. Adm. Code. Based on the information provided by your consultant, it appears the requirements for a temporary exemption for the injection of a remedial material for which a groundwater quality standard has not been established under s. NR 140.28 (1) (d) have been or will be met, in accordance with s. NR 140.28 (5) (c) and (d), Wis. Adm. Code.

Department approval is granted with the following terms and conditions:

A. General:

1. The remedial action for restoring contaminated groundwater or soil, and any infiltrated or injected contaminated water and remedial materials, shall achieve the applicable response objectives required by s. NR 140.24 (2) or s. NR 140.26 (2), Wis. Adm. Code, within a reasonable period of time.
2. The type, concentration and volume of substances or remedial material to be infiltrated or injected shall be minimized to the extent that is necessary for restoration of the contaminated groundwater.
3. Any infiltration or injection of contaminated water or remedial material into groundwater shall not significantly increase the threat to public health or welfare, or to the environment.
4. No uncontaminated or contaminated groundwater, substance or remedial material shall be infiltrated or injected into an area where a floating non-aqueous liquid is present in the contaminated groundwater.
5. There shall be no expansion of soil or groundwater contamination, or migration of any infiltrated or injected contaminated water or remedial material, beyond the edge of previously contaminated areas, except that infiltration or injection into previously uncontaminated areas may be allowed if the Department determines that expansion into adjacent, previously uncontaminated areas is necessary for the restoration of the contaminated groundwater, and the requirements of s. NR 140.18 (1), Wis. Adm. Code will be met.

6. All necessary federal, state and local licenses, permits and other approvals are obtained and compliance with all applicable environmental protection requirements is required. A WPDES general permit for Discharge of Contaminated Groundwater from Remedial Action Operations is required for this action.

B. Specific:

7. The remedial materials to be injected to the soil and groundwater shall be limited to PlumeStop® Liquid Activated Carbon™, Sulfidated Microscale Zero Valent Iron, 3-D Microemulsion, Bio-Dechlor Inoculum, Hydrogen Release Compound and PersulfOx
8. The remedial material and injection project shall be as described in Request for Coverage under WPDES wastewater discharge permit (WI-0046566-07-0). for Contaminated Groundwater from Remedial Action Operations.
9. REGENESIS Bioremediation Products, Inc. shall notify the Department of field activities no less than one (1) week before implementation.
10. In the monitoring plan, include screening for soil vapor as a best management practice.
11. Progress reports shall be prepared to document intermediary milestones to document activities such as injection completion, annual groundwater monitoring, and other phases of the project. Reports documenting annual groundwater monitoring events must provide the information required by s. NR 724.17(3m) and DNR's September 23, 2019 Review letter (item 9).
13. A Groundwater Remediation Report per section 4.0 of the Groundwater Treatment Injection Plan (June 25, 2021) shall be provided after the third post-injection groundwater sample results have been collected which will present an evaluation of data collected during the injection period and will present post-treatment groundwater sample results.
14. The Groundwater Remedial Action Documentation Report shall be provided within 60 days of the receipt of the groundwater remediation performance confirmation analytical results (s. NR 724.15 (1)). The documentation must comply with the requirements of s. NR 724.05 (2) and s. NR 724.15 (3). The DNR will request that incomplete documentation be amended as allowed by Wis. Admin. Code § NR 724.07 (2).
15. Any significant changes based on information from the injection groundwater monitoring reports or results shall be submitted to the Department for approval prior to the changes being implemented at the Former KEP site. This includes, but is not limited to, adjustments to the volume/mass of the media injected, additional injection points (lines), number of injection events, and/or changes in the type of remediation media used in the injection points (lines).
16. Modifications to the sampling schedule may be requested.
17. In the event of future injection activities, the responsible party may apply for an extension of this approval. A request for an extension of this approval must be received by the Department before the expiration date.
18. Any permit extension approvals will be dependent on WI DNR review of site-specific data or any other information it deems necessary.
19. Upon completion of the project, the injection holes (lines properly returned to initial conditions) must be abandoned in accordance with s. NR 141.25, Wis. Adm. Code, and later topped off with grout or native soils if settling occurs, unless converted to NR 141 complying monitoring wells, or an alternative approved by the DNR Project Manager.
20. All work completed as part of the Ready for Reuse funding award must take place within the property boundary of award-eligible parcel. Ready for Reuse reimbursement request documentation must clearly delineate eligible work activity and associated costs from any non-eligible work.

C. Monitoring Conditions:

1. Injection pressure and volume, groundwater elevation changes, and groundwater parameter changes of temperature, conductivity, dissolved oxygen, pH, and OPR will be monitored during the injections as outlined in section 3.3.2 of the Groundwater Treatment Injection Plan (June 25, 2021). Readings, observations, and other pertinent information will be documented in the field at each injection point location.
2. Radius of influence testing according to section 3.3.3.1 of the Groundwater Treatment Injection Plan (June 25, 2021) will be conducted at temporary boreholes throughout the injection process.
3. Accessible on-site sewers will be monitored for breakthrough of injection products.
4. Groundwater samples will be collected from the locations outlined on Table 1 of the Groundwater Treatment Injection Plan (June 25, 2021) after 1, 2, and 3 months after substrate injection.
5. Post Injection Groundwater Monitoring according to section 3.3.3 of the Groundwater Treatment Injection Plan (June 25, 2021).
6. Performance Monitoring per section 3.3.3.2 of the Groundwater Treatment Injection Plan (June 25, 2021).

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

WPDES Permit

The Department has determined that the proposed injection/infiltration discharge to groundwater from Former KEP located at 5555 30th Avenue, Kenosha, WI is eligible for coverage and is hereby authorized under the *Contaminated Groundwater from Remedial Action Operations* Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-0046566-07-0. This determination was based on review of a complete eNOI and Discharge Management Plan submitted by REGENESIS Bioremediation Products, Inc. and received on June 28, 2021. Please download the permit and fact sheet from the Department website at: <https://dnr.wisconsin.gov/topic/Wastewater/GeneralPermits.html>.

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

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

1. **Coverage Effective Date:** Coverage at your facility will become effective under this permit upon the date of this letter until permit coverage termination, revocation, or reissuance of the general permit. This permit applies only to the discharge activities and sites described in the eNOI for the above referenced project.
2. **Discharge Management Plan:** The permittee shall operate consistent with the approved discharge management plan. A copy of the discharge management plan shall be retained by the permittee and this plan shall be made available upon department inspection or submitted to the department upon request. Permittees shall notify the department when the discharge management plan is amended to determine if the amendment requires department approval.

3. Reporting: The permittee is exempt from monitoring and reporting under this general permit and shall follow the terms and conditions of the remedial action plan approval under Ch. NR 724, Wis. Adm. Code, and the temporary exemption granted under s. NR 140.28(5), Wis. Adm. Code.
4. Coverage Termination: Once the project is completed, please complete and submit a Notice of Termination (Form 3400-221) to the Department available at <http://dnr.wi.gov/topic/wastewater/GeneralPermits.html>.
5. Change of Authorized Representative: If you plan on changing the authorized representative contact for the facility or you want to assign a new person to be a duly authorized representative to submit specific permit documents on your behalf, please complete and submit a Delegation of Signature Authority (Form 3400-220) to the Department available at <http://dnr.wi.gov/topic/wastewater/GeneralPermits.html>.
6. Facility Changes: If there have been or will be any changes in facility operations that result in new or different wastewater discharges to the waters of the state, please contact the Department consistent with Section 7.1.6 of the general permit. If reapplication is necessary, please complete a notice of intent (NOI) form for the applicable general permit to verify that your discharge is eligible for that general permit. NOI forms are available at <http://dnr.wi.gov/topic/wastewater/GeneralPermits.html>.
7. Compliance with Permit Conditions: You are responsible for compliance with the general permit requirements and conditions listed above and all other applicable requirements and conditions contained in the general permit. **To assure you remain in compliance and avoid any enforcement action, please read the general permit over carefully.**

LEGAL AUTHORITIES AND APPEAL RIGHTS FOR WPDES GENERAL PERMIT

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

To challenge the reasonableness of or necessity for any term or condition of an issued, reissued, or modified general permit, s. 283.63, Wis. Stats., and Ch. NR 203, Wis. Adm. Code, require that you file a verified petition for review with the Secretary of the Department of Natural Resources within 60 days after notice of the permit decision was issued by the Department. For other permit-related decisions, such as the decision to confer general permit coverage to your facility, that are not reviewable pursuant to s. 283.63, Wis. Stats., it may be possible for permittees or other persons to obtain an administrative review pursuant to s. 227.42, Wis. Stats., and s. NR 2.05(5), Wis. Adm. Code, or a judicial review pursuant to s. 227.52, Wis. Stats. If you choose to pursue one of these options, you should know that Wisconsin Statutes and Administrative Code establish time periods within which requests to review Department decisions must be filed.

If you have any questions regarding this letter, please contact Paul Grittner at (414) 405-0764 or by e-mail at paul.grittner@wisconsin.gov.

Sincerely,



Binyoti F. Amungwafor
Hydrogeologist
Remediation & Redevelopment Program



Paul Grittner
Hydrogeologist
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cc: William Clogan, REGENESIS Bioremediation Products, Inc.
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