

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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May 21, 2009

BRRTS #: 02-28-176509

Mark T. Chiado
Corporate Director Environmental and Safety
Gardner Denver, Inc
1800 Gardner Expressway
Quincy, Illinois 62305

Subject: Work Plan for In-Situ Treatment Using Biological Reductive De-Chlorination,
Temporary Exemption for the Injection of a Remedial Material to Groundwater under
Ch. NR 140, Wis. Adm. Code and Injection Approval under s. NR 812.05, Wis. Adm. Code
for the D B Oak Facility, 700-710 Oak Street, Ft. Atkinson, WI

Dear Mr. Chiado:

The Wisconsin Department of Natural Resources ("Department") has reviewed the *Work Plan for In-Situ Treatment Using Biological Reductive De-Chlorination, D B Oak Facility* dated May 5, 2009 and the *Groundwater Remedial Actions Options Evaluation Report* dated April 2009. The work plan was prepared for the D B Oak Facility located at 700-710 Oak Street, Ft. Atkinson, Wisconsin and submitted with a \$500.00 review fee under the requirements of s. NR 749.04, Wis. Adm. Code, for review and approval. The review fee for this submittal was received by the Department on May 5, 2009.

Previous site investigations identified chlorinated volatile organic compounds (CVOCs) in the soil and groundwater at the site. The source areas of contamination have been linked to the east side of the facility; to a former 10,000 gallon tetrachloroethene (PCE) above ground storage tank storage tank and the loading dock area. PCE is the primary constituent of concern that exceeded groundwater quality standards, but degradation products of PCE (TCE, cis-DCE, 1,1-DCE, and vinyl chloride) and trans-DCE also exceed groundwater quality standards.

Soil vapor extraction (SVE) was operated from mid-July 2007 through December 2007. The SVE system was occasionally shut down during high water table conditions. Soil samples collected in October 2007 indicated that target clean up standards were achieved in six of the seven sample locations. No additional soil remediation is planned at this time.

The specific objective for the proposed remediation at the D B Oak Facility is to treat the impacted groundwater in-situ at the source area. The injection of Edible Oils Substrate (EOS) into the shallow plume will occur via the lateral piping that exists for the SVE system. Direct push technology (DPT) of EOS in borings advanced near the MW-3 well nest will address the intermediate treatment zone where total VOCs exceed 10,000 µg/l. For the deep treatment zone, bacteria inoculation will consist of the direct injection of living bacteria culture into an injection well. An injection well will be located up gradient from the MW-3 well nest and the bottom of the screen will be placed between 100 and 110 feet below ground surface. The injection of EOS and bacteria (which will include members of the *Dehalococcoides* genus) is expected to enhance the biodegradation of CVOCs by accelerating

reductive dehalogenation. This would reduce the CVOC mass in the contaminant plume thereby decreasing the migration of CVOCs in the aquifer. Groundwater monitoring data will be used to evaluate the progress of remediation within the treatment area and the effectiveness of natural attenuation within the surrounding area.

The purpose of this letter is to provide, in writing, a temporary exemption for the injection of a remedial material to groundwater under sec. NR 140.28(5), Wis. Adm. Code, and to address the applicability of an injection prohibition under sec. NR 812.05, Wis. Adm. Code.

Disposition of the Waste Cuttings and the Purge and Development Water from Well Installation

The May 5, 2009 Work Plan stated that soil cuttings resulting from the monitoring well and injection well installation would be "...placed in 55-gallon drums and temporarily stored on-site until arrangements for disposal can be made." A "contained out" determination is needed to verify if the soil cuttings are eligible for disposal at a Subtitle D solid waste landfill. The same determination should be done for the waste cuttings from the borings which will be installed for DPT of EOS into the intermediate contaminant zone.

- In order for PCE impacted soil to be eligible for disposal at a Subtitle D solid waste landfill, the concentrations of PCE must be less than 33 mg/kg, the TCLP values must be less than 0.7 mg/L, and in accordance with the Land Disposal Restriction requirements, the established treatment standard for any PCE impacted soil managed as hazardous waste is 60 mg/kg.
- Likewise, the TCE value must be less than 14 mg/kg, the TCLP values must be less than 0.5 mg/L, and the established treatment standard for any TCE impacted soil managed as hazardous waste is 60 mg/kg.
- The Vinyl Chloride value must be less than 0.87 mg/kg, the TCLP values must be less than 0.2 mg/L, and the established treatment standard for any Vinyl Chloride impacted soil managed as hazardous waste is 60 mg/kg.

Note if the media contains less than 20 times the TCLP regulatory limit based on a total analysis, then it may be assumed it will show a value below the limit if a TCLP test was conducted for that contaminant.

Therefore, an analysis of these soil cuttings needs to be completed to determine if the drummed material will need to be managed as solid or as hazardous waste. The same handling procedures and chemical analysis should be done for the purge and development water to determine if a waste water treatment plant can accept the drummed water or if it will be handled as a hazardous waste. **Documentation of the actual disposition of the soil cuttings and of the purge and development water should be relayed to the department in writing and to include any analysis, manifests, location, amount, method and dates of disposition.** Disposition of the waste should occur by the first hard freeze (approximately by October 15, 2009).

For additional information on handling investigative wastes, see our publication; *General Interim Guidelines for the Management of Investigative Waste* which can be found at <http://dnr.wi.gov/org/aw/rr/archives/pubs/RR556.pdf>.

Determination

The injection prohibition under sec. 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 department to inject a remedial material, of Edible Oils Substrate (EOS) into the shallow and intermediate portions of the plume, and living bacteria (which will include members of the *Dehalococcoides* genus) into the deeper portion of the plume in accordance with this temporary exemption.

Temporary Exemption

The review and approval of environmental investigations by the Department is authorized under s. 292.15(2)(a)1. Wis. Stats., and sec. NR 724.07(2), Wis. Adm. Code. 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 sec. NR 140.28(1)(d), Wis. Adm. Code.

Based on the information provided by NewFields, it appears that the requirements for a temporary exemption under sections NR 140.28(5)(c) and (d), Wis. Adm. Code, have been or will be met. Department approval is required prior to issuance of a temporary exemption.

Therefore, the Department hereby grants a temporary exemption under sec. NR 140.28(5), Wis. Adm. Code, to the D B Oak Facility for the injection of a remedial material to groundwater, with the following terms and conditions:

1. The remedial action for restoring contaminated soil or groundwater, and any infiltrated or injected contaminated water and remedial material, shall achieve the applicable response objectives required by sec. NR 140.24(2) or sec. 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 sufficient for restoration of the contaminated soil or groundwater.
3. Any infiltration or injection of contaminated water or remedial material into soil or groundwater shall not significantly increase the threat to public health or welfare.
4. There shall be no expansion of soil or groundwater contamination, or migration of any infiltrated or injected contaminated water or remedial material, beyond the edges 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 soil or groundwater, and the requirements of sec. NR 140.28(1), Wis. Adm. Code, will be met.
5. All necessary federal, state, and local licenses, permits and other approvals are obtained and all applicable environmental protection requirements shall be complied with.

Note: The issuance of a wastewater discharge permit by the department is required prior to the infiltration or injection of substances or remedial material into unsaturated soil or groundwater. A wastewater discharge permit establishes the effluent or injection limits for substances or remedial material which may be infiltrated or injected into unsaturated soil or groundwater.

6. Approximately 36,250 gallons of a 10 percent EOS solution (EOS mixed with potable water from the fire hydrant on Oak Street) will be injected to the shallow contaminated groundwater. A solution containing 12 percent EOS will be injected into the borings to address the intermediate treatment level. The deep plume will be injected with 264 liters of BAC-9, a living bacteria culture. The remedial material and injection project shall be as described in the NewFields remediation work plan dated May 5, 2009. Groundwater monitoring, temporary and injection well installation shall be as described in the NewFields work plan. Any significant deviations from plans contained in the May 5, 2009 submittal shall be promptly reported to the Department for approval.
7. NewFields shall notify the Department of field activities no less than one (1) week prior to implementation and shall provide updates of the work upon completion.
8. Any significant changes based on information obtained from groundwater sampling subsequent to injection events should be approved prior implementation of the proposed changes for future injection events at the D B Oak site. This includes but is not limited to adjustments to the volume to be injected, timing of injections, and how the remedial material is stored prior to injection, and a general explanation of benchmarks you will use to measure the success/failure of the remedial effort.

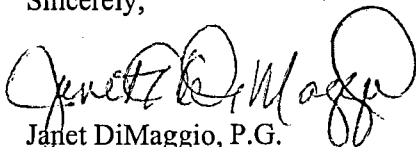
9. A remedial measures progress report shall be submitted approximately 4 months after treatment and include boring and well installation logs in addition to the following information; the total amount of injected remedial material, a site map indicating injection and groundwater monitoring points, maps of groundwater flow direction, water table elevations and groundwater monitoring results (table format containing baseline pre-treatment and first quarter post treatment results). An annual remedial measures progress report shall be prepared and submitted following the fourth quarter of post-treatment groundwater sampling. This report shall include all information listed in chapter NR 724.13(3). In addition, the annual remedial measures progress report shall also include isoconcentration maps of total chlorinated VOCs for the shallow, intermediate and deep treatment zones and shall contain recommendations as to the need for any supplemental investigation or modification to this approval. This report shall be submitted containing information as listed herein and shall also evaluate the next phase of sampling and/or the need for additional treatment by EOS and/or BAC-9 to continue to properly address the CVOC contamination at the site.
10. The expiration date of this temporary exemption shall be 2 years from the date of this letter. However, in the event of future injection activities, D B Oak Facility shall submit to the Department a written description of the work to be performed no less than 90 days prior to implementation. The Department may reissue this temporary exemption if site data demonstrates that re-issuance is necessary to restore groundwater quality in accordance with ch. NR 140, Wis. Adm. Code.
11. The Department determined on May 15, 2009 that a Wisconsin Pollutant Discharge Elimination System (WPDES) general remediation permit is not needed for this project.

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.

This temporary exemption is intended to provide assurances to Gardner Denver, Inc. and the D B Oak Facility that the environmental work being conducted in response to a release of contaminants on the Property is being conducted in accordance with s. 292.15, Wis. Stats.

If you have any questions or concerns regarding this letter, please do not hesitate to write or call me at (608) 275-3295. I can also be reached by e-mail at janet.dimaggio@wisconsin.gov.

Sincerely,



Janet DiMaggio, P.G.
Remediation and Redevelopment Program
South Central Region

cc: David Trainor and Mark McColloch, NewFields
Rich Roth – UIC, DG/5
Bill Phelps – DG/5
Terry Evanson – RR/5 via email